TRANSACTIONS

AMERICAN ACADEMY
of
OPHTHALMOLOGY
and
OTOLARYNGOLOGY

NOVEMBER - DECEMBER
1954

Volume 58 Number 6

ANNUAL MEETING, OCTOBER 9-14, 1955, CHICAGO

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TRANSACTIONS

American Academy of Ophthalmology and Otolaryngology

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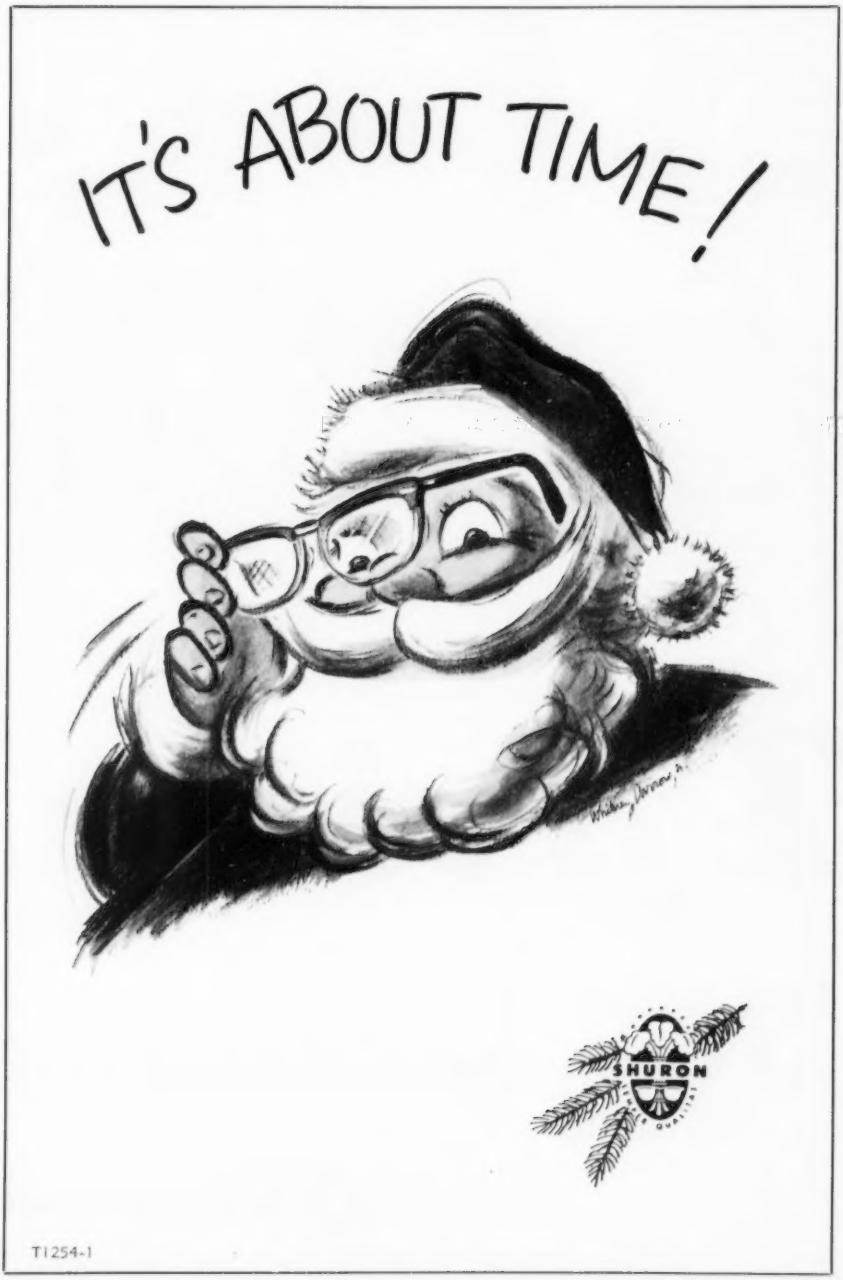
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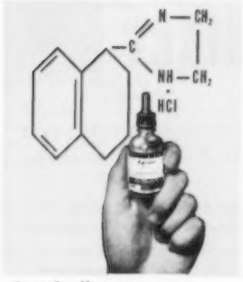

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Reference to RHINALGAN:

1. Van Alyea, O. E., and Donnelly, W. A.: E.E.N.&T. Monthly, 31, Nov. 1952.
2. Fox, S. L.: AMA Arch. Otolaryn., 53, 607-609, 1951.
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6. Browd, Victor L.: Rehabilitation of Hearing, 1950.
7. Kugelmass, I. Newton: Handbook of the Common Acute Infectious Diseases, 1949.

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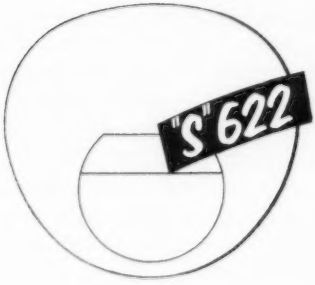

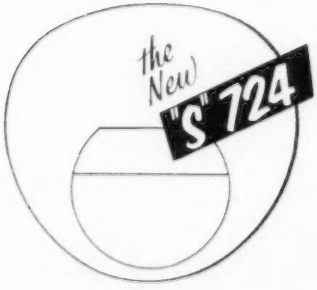

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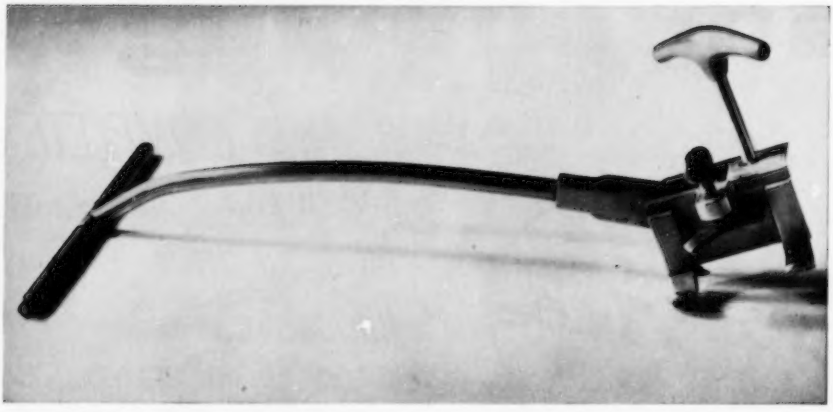

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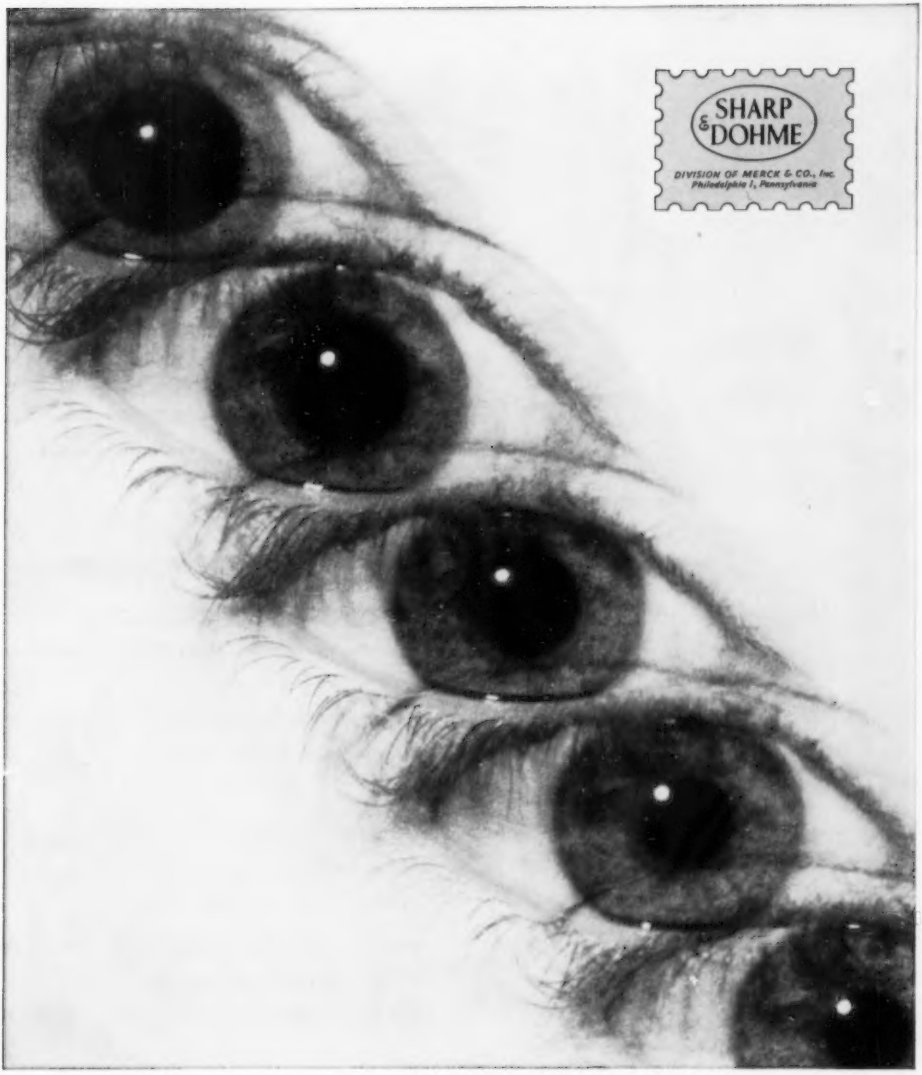

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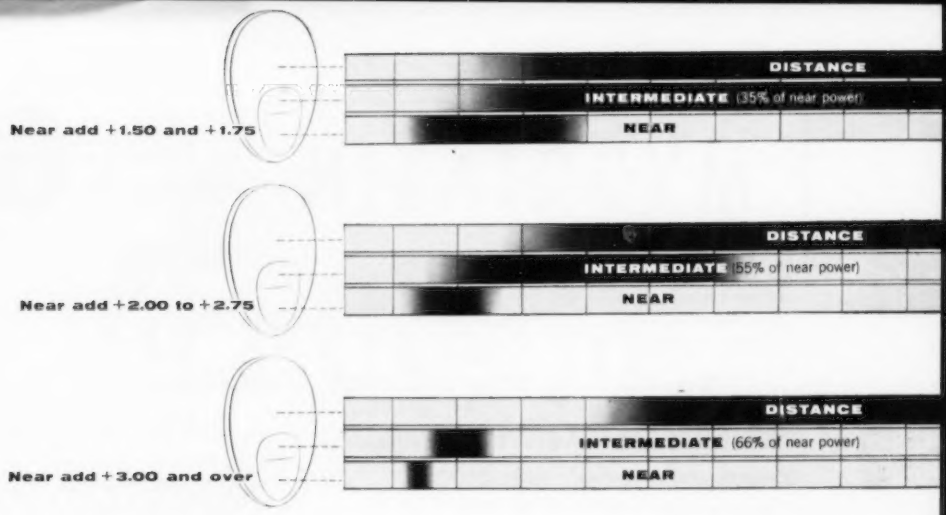

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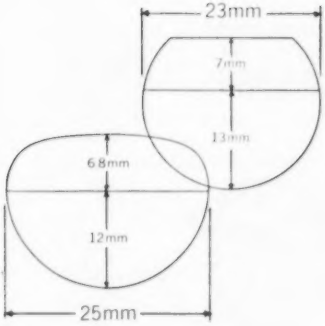

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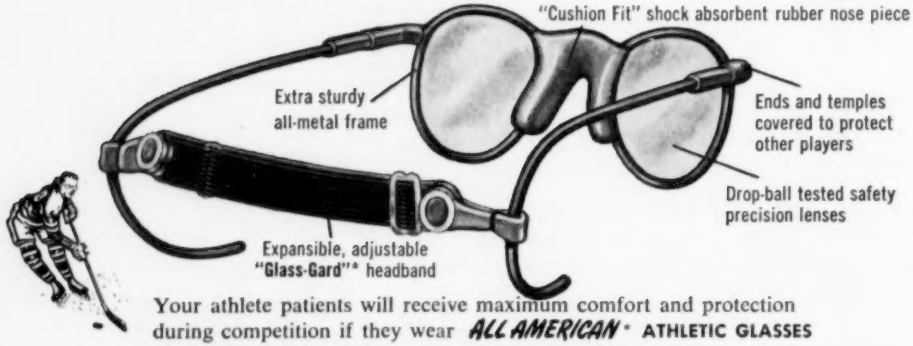
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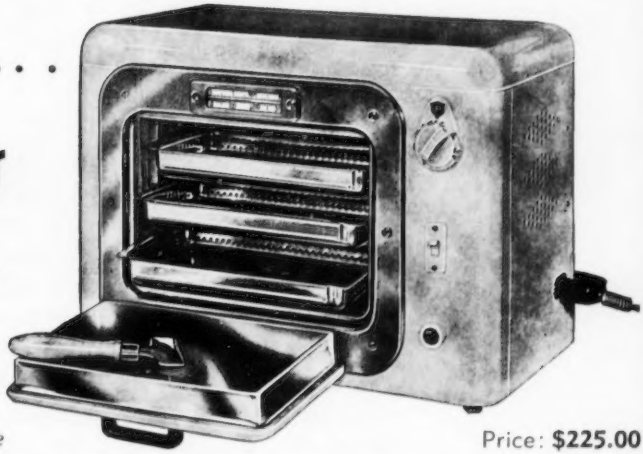

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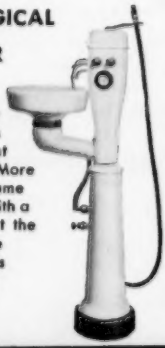

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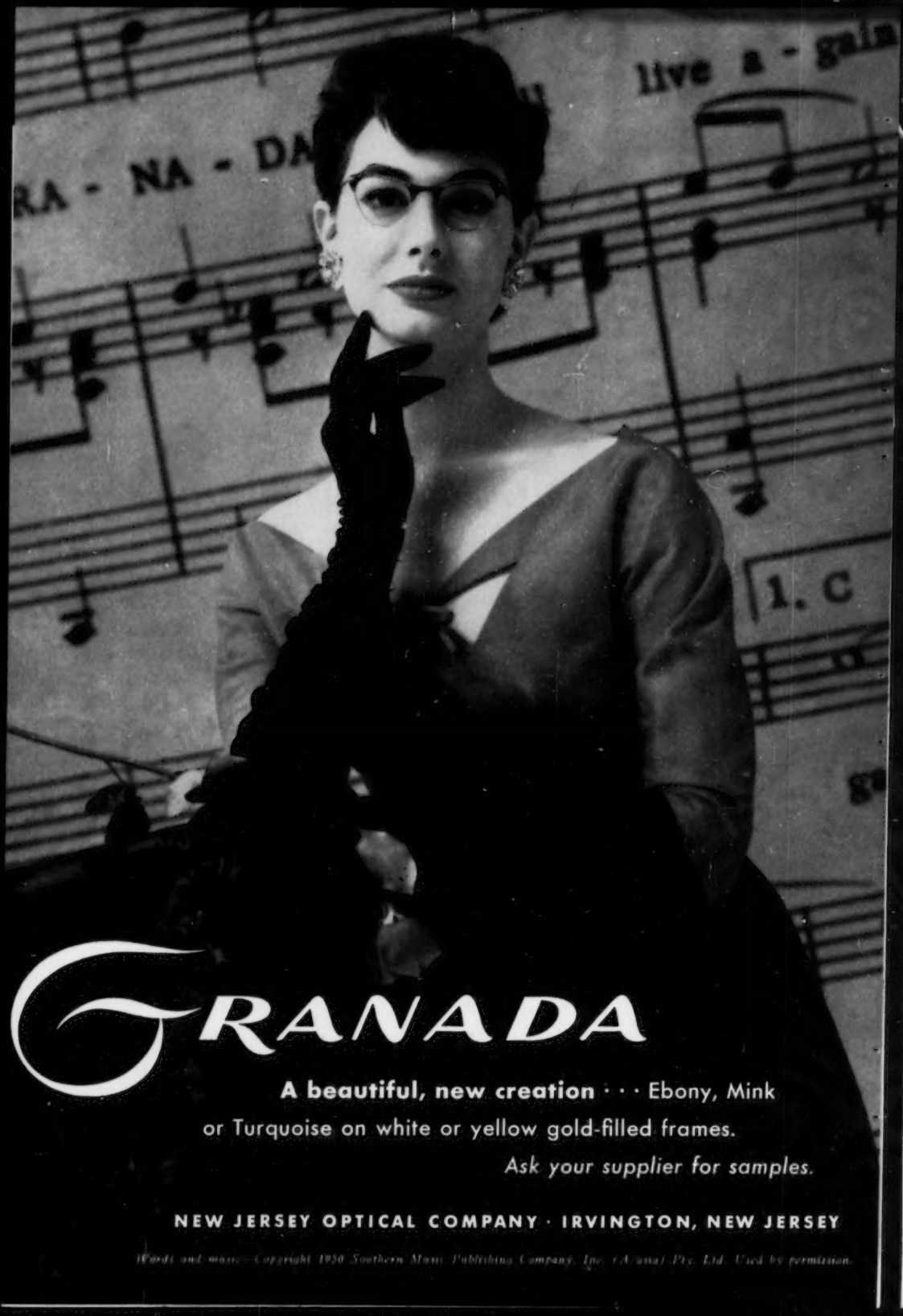

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Address of the Guest of Honor

SOME THOUGHTS ABOUT RESEARCH IN THE TRAINING OF THE DOCTOR

W. J. McNally, M.D.
MONTREAL, QUE., CANADA

To be invited to be the guest of honor of the American Academy of Ophthalmology and Otolaryngology gave me one of the greatest surprises and pleasures of my life. I telephoned my wife at once to share with her the invitation from Dr. Theobald.

I am particularly proud to follow in the footsteps of my former chief, Dr. H. S. Birkett, who was the guest of honor of the Academy at the Detroit meeting in 1927. Shortly thereafter, the President, Dr. Ross Skillern, and the Secretary, Dr. William P. Wherry, came to Montreal to present Dr. Birkett with the Academy Gold Medal of Honor. While in Montreal they visited the physiology laboratory at McGill University and saw the experimental work on the labyrinth being performed by Professor Tait and myself. They were later instrumental in having me appointed as an Academy Research Fellow, and that recognition and financial assistance made it possible for me to carry on investigation and clinical practice simultaneously for many years.

My debt to the Academy is large, and year after year has increased since my first meeting in Montreal in 1924. The meetings then were much smaller than they are now, and I am reminded of a little incident. One of the social functions was a bridge tournament for the ladies and the prize for each table was beautiful. The wife of a prominent member had a preview and was so much impressed that she was overheard to say to her friend, "Hold the cards close to your stomach because the prizes are good." Ladies and gentlemen, that story typifies my experience — the Academy prizes are always good!

Dr. Coates, in his presidential address before this Society in 1939, pointed out that the Academy has been true to its name — a place where one goes to learn. He stated that from its standards of admission have developed the American Boards in all the various specialties and that the instructional courses of the Academy have been the precursors of many of the annual postgraduate courses given by medical societies and universities throughout the country.

The Teachers' Section of the Academy, the emphasis on the study of the basic sciences, the study of the handicapped individual, both child and adult, have resulted in improved training facilities throughout the country. The Home Study Courses have been a great asset to resident training, even in the teaching hospitals. The work of the committees in industrial ophthalmology and in conservation of hearing has given leadership to both industry and labor.

The excellency of the teaching program must ever resound to the credit of the Academy's secretaries, those wonderful, selfless and devoted men who, without remuneration, go on year

Presented at the Joint Session of the Fifty-Ninth Annual Session of the American Academy of Ophthalmology and Otolaryngology, Sept. 19-24, 1954, New York, N. Y.

after year providing us with a scientific fare, each year to be excelled only by the next.

The Academy has embodied a great American educational tradition. Instead of fostering excellence in a select few, it has set as its aim the raising of the general level of all in the specialties. Its main requirement for admission to membership is sufficient knowledge to meet the minimum standards of safe practice. What is so important, however, is that it helps the young man to prepare himself to meet those standards by placing its facilities at his disposal even before he has attained to membership. After admission, it carries him forward during the remainder of his medical career.

In order to have an adequate training a specialist must have a sound knowledge of general medicine and surgery. Added to that, he must have a knowledge of the basic sciences related to the specialties and, finally, he must acquire the technics of special diagnosis and treatment. In many training programs, research or original investigation does not play as important a part as it might.

Grave concern has been expressed because of the present day emphasis upon technical training at the expense of more general training in fundamentals such as literature, history, language, philosophy and other cultural branches of knowledge. At the World Conference on Medical Education held in London in August 1953, it was pointed out that medical education should be regarded as a University discipline and not as a vocational training. Curtailing the classical training of the doctor has altered his professional outlook and has lowered the public esteem in which he was formerly held. Pickering[2] stressed the difference between instruction and education. He pointed out that to instruct is simply to furnish an individual with knowledge and information and he stated that this last form of teaching has taken over many of our medical training programs. Education should train the mind to seek its material from original sources and should train it to weigh the pertinent evidence. Pickering stated further:

> A well educated man is not only a man of knowledge but he is one who can clearly define a problem, collect the relative facts, evaluate what may seem to be contradictory evidence and arrive at a correct judgment of the problem.

Whitby[4] described the ideal medical student as "cultured, broadly educated in the humanities, intelligent, intellectual, of transparent integrity, humane and sympathetic and, above all, one who will love his profession as well as his fellowmen and all their weaknesses, their joys and their sorrows." He deplored the evidence of poverty of mind in some of our finished medical graduates.

In the art and science of medicine the doctor is dealing with a heritage of accumulated information and experience, some of which has been established fact but much of which is still hypotheses. The manifestations of each disease process are subject to the individual variations of the host. The doctor should be in a position to reassess much of what has been written, and in order to do this he must be trained in observation and deduction. He must be able to assess the real from the apparent causative factors. He must be able to weigh and check every phase of a problem in an unbiased manner. His own theory should be finally accepted only after an honest effort has been made to discredit it.

As a result of more widespread research training there may develop outstanding investigators in the basic sciences or in the clinical aspects of our

specialties. But what is more important is that a research training should tend to give us clinicians a greater stature. It has been suggested that investigation should be begun in the undergraduate years. Research should have a place in the training of every doctor because it does tend to supply some of the educational training which has been lacking in many curricula. Research might best be begun after the student has had clinical training and is aware of some of the unsolved problems. He will have a better appreciation of the application of the pertinent basic sciences to the clinical problems. The basic sciences could well be studied during a year which is mostly devoted to research. Research can be carried out in the basic sciences or in the clinical aspects of medicine. There are some advantages in the first investigation being done on a full-time basis under the direction of a specialist in the basic sciences and in a laboratory devoted to the general aspects of the special subject in question. For instance, if the candidate is working in a general physiology laboratory and under the direction of a general physiologist, related aspects of the problem can be more readily assessed. The research assigned may be on the ear or on the eye but it may, as it unfolds, develop aspects related to more distant fields of general physiology. In such a laboratory one comes in contact with students working on other aspects of physiology and there are lectures and seminars available on general physiology. Professor Magnus claimed that the workroom itself should be open and not partitioned, so that each worker is a stimulus to the other.

The first animal experiments may be made relatively simple. One or more variables can be controlled. One can arrange to have a simple stimulus and a single reactor. The experiments can be made progressively more complex so that the student gradually develops his initiative, scientific aptitude, powers of observation, sound reasoning and critical judgment. Sir Frederic Bartlett[1] defined experimental thinking as "the proper weighing of similarities and differences." He stated, "Differences are striking, but what is more important is the discovery of significant similarities." These are most likely to be found by studying the same phenomenon simultaneously from two different aspects. To what extent experimental results from one animal may be carried over to another must be known as well as in how far do animal experiments apply to man. One of the first things that a research student must learn is how to search and evaluate the literature. It has been said that if there was more read there would be less written. Before proceeding to an experiment, one should know as much as possible of the previous pertinent work. Searching the literature is a stimulus to studying other languages because it is so much more satisfactory to be able to read a crucial article in the original rather than to have to depend upon a translator's digest. When spending a year in the laboratory, time can often be found for courses in one or two foreign languages. The weekly seminars of a laboratory are excellent training ground for the writing and presenting of papers. One's language must be clear and concise and one should be painstaking in the preparation of charts, tables and illustrations. An illustration should illustrate, and if a photograph is used, it should be photographically excellent.

The preparation of a good manuscript is one thing and the presentation of a good paper is another. In the laboratory seminar one learns some of the courtesies of lecturing. To exceed one's allotted time is to presume that your presentation is more important than those that follow. Meredith, when discussing the art of lecturing, stated that

"training in the techniques of lecturing is not the whole answer," but he does suggest that the criticism of one's delivery by a small seminar group is helpful. He believes that mastery of the subject and original work by the speaker add greatly to the listener's interest. He stresses the importance of vitality—one must catch and hold the attention of the audience by whatever means. The lecturer, for the occasion, is an actor and his expression, his gestures and his personality should be evident to the audience. This is not always easy, today, when one addresses a large audience and must stand behind the microphone, which is frequently on a lectern so large that the speaker's head can scarcely be seen over the top. A common practice is to read the manuscript, word for word, while slides are shown of the illustrations, charts and tables. Since very few are gifted readers, if the slides shown are numerous and too detailed to be grasped by observers who see them for the first time, their trains of thought lag behind with the result that the speaker's voice, coming out of the dark, may have a dangerously soothing effect upon the audience. A good slide attempts to illustrate not more than one or two points at a time and has a limited amount of printing so large that it can be easily read. Unless slides are used sparingly and with the lights turned up as frequently as possible, special arrangements should be made to have a spotlight directed on the speaker.

Professor John Tait taught that because even the best scientific paper includes only a few new facts, the lecturer, who should be thoroughly familiar with the subject matter, ought to be able to select and present these new points in simple language with a few clear illustrations. The paper with all its details can be read and assimilated at leisure when it appears in print. If anyone in the audience wishes some additional information, this can be brought out in the discussion.

Having mastered the research method in the basic science laboratory, then the investigator may proceed to the equally important but possibly more complicated field of clinical research. Sir Francis Walshe[3] stated that some of the greatest contributions to medicine had been made by clinical investigations carried out by such men as Hughlings Jackson. Walshe considers these men geniuses because they combined accurate observation with conceptual thinking. Great discoveries are made not alone by the recording of data, but of even greater importance is the capacity to discover the underlying principle involved. This latter is Walshe's conceptual thinking. Walshe pointed out that in clinical investigation nature sets up the experiment, she provides the stimulus, simple or complex, she chooses the area or areas to be stimulated. The signs produced may be the result of stimualtion or destruction. Each yields different types of evidence which, if properly analyzed, may be mutually supporting. The accuracy of the observation and shrewdness of deduction will determine the stature of the investigator and the value of the investigation. They separate the scientist from the technician. Clinical and experimental investigation may go hand in hand. A leading article in the *British Medical Journal* on September 3, 1949, page 520, includes the following:

> The training in scientific method, whilst providing the student with capacity for logical, impersonal, objective thought, should add point to the skill with which he applies his treatment and to the understanding and fellow-feeling that soften his conversation with his patient.

We are not in the habit of thinking of good clinicians as scientists, and yet that is just what a good clinician is. The

diagnostician must elicit the symptoms, correlate them with the history, observe the signs and weigh the laboratory evidence before he can establish the diagnosis and institute the correct treatment. He has a threefold duty, to practice, to teach and to contribute new facts from his personal experience. It is when confronted by one of the large number of illnesses for which there is no established cause or effective remedy that there is a challenge for each of us to make our contribution to medical knowledge. Someone has said that medical knowledge has reached great peaks but that there are still some dark and deep valleys. With more clinicians trained in methods of investigation, it is to be hoped that the valleys will be levelled off or even turned into shining mountains of achievement. Since each of us must spend his life working in a field where there is still so much unknown, one should dare to hope that he may add even a grain of truth.

Doctors, more than any other group, are called upon to make decisions which affect the happiness and even the life and death of others and, therefore, must be filled with St. Paul's charity. If the doctor is contemplating an experimental procedure—either medical or surgical—he is ethically obliged to fully acquaint the patient with the fact that it is an experiment, and, in so far as possible, give him a true picture of possible results, so that his consent or refusal will follow an informed judgment.

If there is a risk involved, the Golden Rule is particularly applicable and the doctor should ask himself whether he "would submit or allow a member of his family to submit to such a procedure under the same set of circumstances."

The Hippocratic Oath sets the doctor apart from, but at the service of, others in his search for happiness.

Each of us is seeking happiness, but we may not have stopped to ponder in what it consists. Happiness can be achieved only when, with a clear conscience, we are creating it for others.

Principal James of McGill University, speaking at the Convocation of the University of Rochester in June 1954, commented upon a passage in the Declaration of Independence dealing with certain inalienable rights, including life, liberty and the pursuit of happiness. He stated:

> Perhaps it is not too much to say that the concept of man's inalienable right to the pursuit of happiness is the most dangerous concept that has ever been expressed in the long centuries of history of democratic thought.

He went on to state that "happiness cannot be pursued—it is a by-product of other pursuits." He stated further:

> Liberty and the pursuit of happiness are the result of hard work, constant vigilance and virtuous activity—there was nothing automatic about the operation of any of these benefits.

God promised us not ease and luxury but a life of toil. While learning the discipline of medicine we should have acquired the habit of self-discipline and self-denial rather than self-indulgence and the pursuit of personal happiness in a selfish manner, which are at the root of many of today's problems. It is because God has been offended, and by all of us, that we must expect and accept trials, tribulations, illness and even disaster. We, as physicians, must face up to these unpleasant facts and we must help our patients to do likewise. It is refusal to accept these hard facts which is responsible for so much unhappiness, so much frustration and even suicide. The thinking physician realizes how often results which follow are disproportionate to his treatment and his complete dependence upon the Will of God must often be borne in upon him.

God does not work His Will in a spectacular manner, but slowly and often by circuitous means. It is not easy always to do the right thing; someone has likened it to rolling a heavy stone uphill and the temptation is to let go. Only with God's help can we hold on. Our scientific training should have sharpened our powers to observe the facts—our dependence upon God — and it should have directed us to discern the underlying principle of God's eagerness to help us attain eternal happiness. To be happy is to be right with God. Let us pray to him on every and all occasions.

I am sure that most doctors do pray. I wish to pay tribute to one of our former members—an outstanding otolaryngologist who was never afraid or ashamed to pray, who encouraged others to do so, and one who took daily advantage of that greatest of all prayers, The Mass, the late Dr. John J. Shea of Memphis, Tennessee, President-Elect of the American Academy of Ophthalmology and Otolaryngology at the time of his death in 1952.

Let us all pray with Lincoln for "firmness in the right as God gives us to see the right."

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THE RATIONAL USE OF ANTIBIOTICS IN OPHTHALMOLOGY

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WITH the many antibiotics that are and soon will be available for therapy in ophthalmology, the problem of the selection of the proper antibiotic for ocular use is not a simple one. We are indebted to all those who have carefully evaluated the presently available antibiotics, men such as Von Sallmann, Bellows, Struble, Braley, DeRoetth, Sorsby,[11] Robson, Saubermann,[10] Lepri and other co-workers. The factors that are essential in the general consideration of all antibiotics are of importance in ophthalmology. Generally, the choice of drug for therapy will depend on such factors as effectiveness, toxicity, ease and cost of administration.

Effectiveness of any antibiotic will depend not only on its mode of action, whether it be bactericidal or bacteriostatic, but also on the nature of the lesion, on the general and local response of the host to the infection, and on the dosage. For most of the body tissues the concentration of any drug in an inflamed lesion tends to lag behind but to persist longer than that obtained in the blood. Access of the drug to the responsible organism in the lesion will depend in part on the nature, chronicity, and degree of vascularization of the lesion. Circumscribed staphylococcal lesions of the lids such as boils are not as accessible as spreading cellulitis. Fibrocaseous types of tuberculosis are less responsive than active progressive tuberculosis. Elsewhere in the body poorly vascularized lesions such as those of subacute bacterial endocarditis require prolonged therapy with huge doses, in order to be effective. Because of the characteristics of the blood aqueous barrier, ophthalmologists have to be concerned not only with all the factors that determine the effectiveness of an antibiotic elsewhere in the body but also with how this agent will penetrate into the infected ocular structures.

From Wills Eye Hospital, Philadelphia.
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Penetration

Most antibiotics penetrate poorly from the blood stream into the aqueous humor, cornea and vitreous. For this reason the usual systemic doses required for infections elsewhere in the body are rarely adequate for intracorneal or intraocular infections. The extraocular tissues, such as the conjunctiva, and extraocular muscles reveal much higher concentrations following systemic administration than other ocular structures. Glands of the lids may not be accessible readily to most systemically administered antibiotics.

Local penetration. Almost all locally applied antibiotics and chemotherapeutic agents penetrate poorly through the normal cornea into the aqueous humor. When the corneal epithelial barrier is removed, as by abrasion or ulceration, penetration increases.

Method of increasing penetration of local administration. Several technics are available to increase the penetration

of an antibiotic or chemotherapeutic substance in the presence of a normal or abnormal cornea. A detergent such as zepheran, or phemerol or duponol, can be added to the vehicle. The antibiotic can be applied as a corneal bath, or iontophoresis can be employed. All of these probably break the epithelial barrier to penetration. Cotton packs will enhance intraocular penetration, as will subconjunctival injections.

Toxicity of Adjuvant Therapy

Each of the adjuvants, however, poses a certain toxic threat if improperly used. Detergents must be used in concentrations that do not damage the cornea. Repeated instillations in high concentrations may retard epithelial regeneration. Cotton packs, if not carefully placed in the cul-de-sac, may damage the cornea mechanically. Iontophoresis may lead to corneal edema if used at too high a strength and for too long. The pole applied to the cornea is important, for Von Sallmann has shown that greater damage may result to the cornea when the positive pole is placed there. Subconjunctival injections are painful, particularly when massive doses of antibiotics are employed. There is always the remote chance of inducing a scleral slough in an individual unexpectedly allergic to the injected substance.

Systemic Administration

Although most of the antibiotics and chemotherapeutic agents penetrate poorly from the blood stream into the eye, there are fortunately a few exceptions. Chloramphenicol and some of the sulfonamides are more diffusible in this regard than penicillin, streptomycin, terramycin, aureomycin, tetracycline, erythromycin, magnamycin, polymyxin, bacitracin and neomycin. The latest antituberculous agents, i.e., the isonicotinic acid hydrazides, are very diffusible.

There is a threshold of intraocular entrance for any agent. For example, by giving massive doses of penicillin systemically one can increase the concentration obtained in the aqueous humor.

The route of administration is important. Of the antibiotics and chemotherapeutic agents that can be administered orally in tolerated dosage, only chloramphenicol, isonicotinic acid hydrazides and sulfonamides produce theoretically effective intraocular concentrations.

Intramuscular administration of penicillin and streptomycin in massive dosage will produce respectable intraocular concentrations.

Intravenous routes of administration with massive doses of terramycin, aureomycin, tetracycline, erythromycin, and almost all available antibiotics create intraocular concentrations that are of potential therapeutic value for each of these agents against intraocular infections.

Ocular inflammation lowers the blood aqueous barriers so that routes of administration and dosage schedules that produce theoretically satisfactory levels for normal eyes should result in more than adequate intraocular concentrations for infected eyes.

Most of the penetration data are based on experimental animals, but in the past few years enough analyses have been performed on human eyes to indicate that available experimental information concerning antibiotics is applicable in qualitative fashion to the human blood-aqueous barrier.[7,10]

There are numbers of reports on the experimental evaluations of almost all available antibiotics against standard ocular infections, and a huge literature has accumulated concerning clinical trials.[4,7]

Choice of Drug in Acute Infections

With a background of this fundamental knowledge concerning experimental penetration studies, controlled

experimental infections, and clinical trials, one may suggest dosage schedules for therapy of ocular infections.

In selecting antibiotics there is one principle that should be followed whenever possible. One should attempt to treat the etiologic organism, specific infections and not clinical syndromes. This is not always possible in ophthalmology. This is particularly true with intraocular infections where negative cultures are frequently encountered in the presence of obvious clinical signs of infection. Where one knows the responsible organism, his therapy can be specific. Usually he can choose from several potentially effective antibiotics. He must be certain, however, that the agent he selects penetrates well to the infected area. This means that the agent must be employed in an adequate concentration and by the route of administration that will most likely lead to the adequate concentration with the least pain, danger, inconvenience and cost to the patient. Fortunately a concentration of the drug at the site of infection approximating two to four times the bactericidal or inhibitory level in the test tube will usually be as effective as concentrations one hundred times these levels. It is not always necessary that the antibiotic concentration be kept at a continuously high level. The aim of therapy is to give enough drug, not too much; to prevent the multiplication of the micro-organisms in the tissues until the host's own resistance can overcome the infection. Most of the antibiotics exert their action on actively growing and multiplying micro-organisms. Bacteria multiply at different rates. Pyogenic cocci multiply rapidly. It is therefore necessary to maintain a more or less continuous high level of the antibiotic, in order to prevent the organisms from rapid regeneration. On the other hand, slow-growing organisms, such as the tubercle bacilli, do not require steady concentrations of the drug in order to inhibit their growth. Thus, it is necessary to give penicillin regularly, at frequent intervals, in high dosage, in order to overcome a staphylococcus or streptococcus infection; whereas in the therapy of tuberculosis, it is possible to give streptomycin twice a week and have it effective.

If one is not fortunate enough to be guided by bacteriological studies in a selection of antibiotics, he then must use an antibiotic which has a broad spectrum with the hope that this agent will be able to overcome the organism responsible for the infection, whether it be gram-positive or gram-negative. Whatever broad spectrum antibiotic is chosen, it is necessary to know the penetrating qualities of the antibiotic, and to elect the route of administration which will allow the physician to obtain adequate concentration in the infected ocular tissues. Then, if no favorable effect occurs, the physician can rightly assume that the organism responsible for the infection is not susceptible to the antibiotic selected. Therefore, another antibiotic should be tried.

Combinations of Antibiotics

Combinations of antibiotics may allow one to increase the antibacterial spectrum. Such combinations, in addition, may prevent the emergence of organisms resistant to an antibiotic. For example, the simultaneous administration of streptomycin, para-aminosalicylic acid, or streptomycin and isoniazid may reduce the development of resistant strains of tubercle organisms. Also, combinations of antibiotics may have a synergistic effect. This is usually shown to be true experimentally only if both drugs are fundamentally bactericidal in action, such as the combination of penicillin and streptomycin. When bacteriostatic agents such as terramycin and aureomycin are combined, the most one

can expect is an additive effect, as though one were doubling the dose of either agent alone. Experimentally, the combination of a bactericidal and bacteriostatic drug may actually produce an antagonistic effect. Clinical experience has not substantiated all of these experimental findings to date. Also, microorganism strains vary in their response to drug combinations.[3,5] Nevertheless, if one is going to use combinations of antibiotics it would be advisable to use those combinations which have experimental background supporting the effectiveness of the two agents as opposed to either one alone where bacteriologic testing cannot be done.

Selection of Antibiotic for Local Use

Most conjunctival infections will respond to local instillations of antibiotics. Many corneal infections will respond to local routes of instillation. Even sac infections will respond to direct injection into the sac, but the permanent effect will not occur unless any nasolacrimal obstruction is removed. The problem with external infections is simplified by the ease with which one may obtain bacteriologic aid. If no response occurs to an external infection and positive cultures can be obtained, this aid to the proper selection of the antibiotic is a considerable one. If possible, it would be advisable for ophthalmologists to use antibiotics and chemotherapeutic agents which are not going to be employed very frequently for systemic administration. Such agents as neomycin, polymyxin, bacitracin and some of the more recently investigated antibiotics produce considerable systemic toxic signs, and as a result are rarely used for infection elsewhere in the body that requires systemic administration. If a patient with external ocular infection is treated with one of these agents and the patient develops a local sensitivity reaction to the agent, he is not at a great disadvantage as far as future more serious body infections are concerned. Such individuals can still be treated with the more commonly used systemically administered antibiotics, and will not have developed a hypersensitivity reaction to an antibiotic for a local ocular infection which would exclude its use for more important body infections.

Stability of preparations is important in ophthalmology. Most antibiotics can be expected to maintain their potency for several weeks or months if made available in ointment form. However, only a few are stable when in solution. Ointment applications frequently cause patients discomfort from the visual blur produced by the ointment base, and for this reason drop instillations may be preferred. However, drops usually have to be instilled more frequently than ointments, which may make them less desirable for many patients. Some of the antibiotics, such as chloramphenicol and neomycin, are stable in solution for a sufficient length of time to allow one to use the solution without renewal until most responsive external infections have been overcome. Other less stable preparations require refrigeration and frequent renewal of fresh potent solution, which produce inconvenience for the patient.

Toxicity

Cruickshank[2] has classified the toxic features of antibiotics into four main groups: (a) local irritative or necrotic action; (b) allergic reactions, which can follow either local or systemic administration; (c) secondary infection and replacement flora following the elimination of the normal flora; and (d) specific toxic effect on selected tissues or organs. These toxic features are well known to all who use antibiotics. In ophthalmology we are particularly concerned with the local irritative effect. Some agents are more irritative than others. For example, aureomycin and

terramycin are quite irritating when injected subconjunctivally, more so than penicillin, streptomycin and chloramphenicol. The irritating quality of an antibiotic will, of course, depend on its concentration. A tolerated concentration can be found for all antibiotics. However, this tolerated concentration may not allow adequate intraocular penetration from subconjunctival depots, for example.

Local sensitization of the eyelids and conjunctiva is a frequent complication to the use of antibiotics, and various allergic reactions including anaphylactic shock and death have followed the administration of antibiotics, particularly penicillin, systemically. The usual local signs consist of erythema and edema, with later scaling and thickening. Systemic manifestations of a hypersensitivity reaction consist of rashes, drug fever and sometimes joint involvement. One might include the blood dyscrasias in this group of sensitization reactions; on the other hand, there may be a toxicity which is not one of sensitivity. Welch and his co-workers[13] have recently reviewed the relationship of antibiotics, particularly chloramphenicol, to blood dyscrasias. Late in 1952 it was reported that chloramphenicol on rare occasions and in certain susceptible individuals caused blood dyscrasias, such as aplastic anemia, thrombocytopenic purpura, agranulocytopenia and pancytopenia. No data were obtained in the survey, which explained the mechanism by which chloramphenicol brought about these reactions. The extremely low incidence, however, argued against an inherent toxicity of the nitrobenzene portion of the chloramphenicol molecule. It seemed more likely to Welch and his co-workers that this was a manifestation of some obscure sensitivity phenomena which may or may not be related to the nitrobenzene radical. It should be noted that some patients who developed a reversible granulocytopenia, which was not associated with the use of chloramphenicol, were treated later with chloramphenicol without any adverse effect upon the hematopoietic tissues. Similarly Welch and his co-workers noted that there were a few patients who developed granulocytopenia following exposure to chloramphenicol and after recovery again received chloramphenicol with no untoward effect. Brown[1] has reported an individual with Hodgkin's disease, treated with chloramphenicol for nearly two years without any significant effect on the peripheral blood picture. In their most recent study, including 1,448 case reports of various blood dyscrasias which were thoroughly analyzed, it was indicated that penicillin is probably the least toxic of the potent chemotherapeutic agents as far as the blood picture is concerned, but it is a very frequent offender as far as anaphylactic types of reactions and death ensuing from such reactions are concerned. There is some slight evidence that other antibiotics might be responsible for sporadic cases of blood dyscrasias. They were not able to conclude that chloramphenicol, or any of the other drugs which they considered, definitely caused blood dyscrasias. It simply appeared from the clinical records that chloramphenicol may occasionally in a susceptible individual produce blood dyscrasia but that the incidence is extremely low. It is probably less than one patient in every 100,000 that are treated.

Streptomycin, which can produce damage to the eighth cranial nerve, and neomycin, which can produce ear as well as renal damage, along with bacitracin and polymyxin, are examples of specific toxicity.

Many of the broad spectrum antibiotics such as aureomycin and terramycin, when given orally, may tend to eliminate the normal flora of the mouth and bowel, and this flora may be re-

placed by organisms which normally are not present in great number in these mucous membranes, such as Monilia, thrush, Pyocyaneus, and as a result, inflammation of the mucous membranes of the mouth can occur. This may be related to vitamin B deficiency, or simply to the overgrowth of the unusual micro-organisms. This is a definite possibility in ophthalmology, where longstanding antibiotic therapy may be employed, such as the use of antibiotic agent to prevent secondary infection in the treatment of corneal burns, as has been demonstrated by Leopold and La Motte.[8] This overgrowth of organisms has been called superinfection. In other words, the end result will be the flourishing of an organism in the ocular tissues due to the prolonged use of an antibiotic. In the case of superinfection, when the antibiotic therapy is stopped, usually the abnormally occurring micro-organism will disappear as the normal flora reappear. This appearance of unusual organisms may be due to the lack of the normal bacterial flora producing antibiotic substance in the conjunctival culde-sac, as has been demonstrated to be possible by Halbert and his co-workers.[3a]

It is important for every ophthalmologist, as well as for every physician, to know the potential dangers of any drug he is administering. The decision to use penicillin, chloramphenicol, or any other potent drug must rest with the physician. He must balance through his clinical experience and judgment the drug's potential to do harm against the seriousness and nature of the condition which he is trying to treat and the possibility of improving the condition by using the toxic agent.

Special Ocular Problems

There is no doubt that there has been a great reduction of visual loss due to infection with the advent of antibiotics and chemotherapeutic agents. Remarkable as these statistics may be in this regard, there are still eyes lost today because of the inability to control a variety of ocular infections, in spite of vigorous antibiotic therapy.

Reasons for Failures in Antibiotic Therapy of Ocular Infections

There are several possibilities as to why intraocular infections occasionally fare badly with antibiotic or chemotherapy. It may be that the dosage employed or the route of administration was inadequate or improper. One must be certain that the concentrations of antibiotics and chemotherapeutic substances reaching the infected tissue are adequate. It may be that the organism responsible for the infection is not susceptible to the antibiotics selected. It may be that the infectious process has progressed so far before institution of therapy that considerable destruction of normal tissue had already taken place, and although the antibiotic is successful in overcoming organisms, the ocular destruction resulting from the previously uncontrolled infection is responsible for the continued visual loss. The earlier these types of ocular infection are treated, the better the chances for retaining a visually useful eye. Corneal abscesses, extensive when therapy is introduced, may become sterile under the course of treatment, but because of the tissue destruction associated with the infectious process, the cornea may perforate. Some of these eyes may be retained by virtue of therapeutic transplants.

Prophylactic Therapy

In a potentially infected wound, such as after a penetrating foreign body injury, it is advisable to treat the eye as though it were infected. One should use a broad spectrum antibiotic or a combination of antibiotics which will allow one to attack a variety of potential infecting agents. They should be employed in adequate concentrations and

by a route of administration which will guarantee effective ocular tissue levels of the chosen drug or drugs.

There is considerable question as to the advisability of prophylactic antibiotic therapy in eyes undergoing intraocular surgery. Fortunately the incidence of infection after intraocular surgery is extremely low. There are many toxic features to antibiotic therapy so that many ophthalmologists are reluctant to use prophylactic anti-infectious drugs where the possibility of such an infection is not great. Here again, the art of medicine becomes apparent. The ophthalmologist must be able to weigh the advantages to the patient against the risks involved. It is true that the ophthalmologist whose patient has recently lost an eye due to the advent of intraocular infection after intraocular surgery becomes an ardent advocate of prophylactic antibiotic therapy in future cases of intraocular surgery.

Antibiotics in Association with Other Forms of Therapy

There is no question that antibiotic chemotherapeutic agents are not a substitute for strict surgical asepsis. Every measure which will prevent the development of infection should be employed for each patient. One cannot stress too strongly the necessity of using sterile solutions, of not operating in the presence of an infected lacrimal sac or of diseased lids, and of removing superficial foreign bodies under the most rigid technic of asepsis.

Use of steroids in combination with antibiotics. There has been a recent change in the attitude of investigators who are dealing with the problem of infection. With the advent of the antibiotics the main emphasis was laid upon discovering the invading organism so that one could find the specific agent to counteract this invader. This, as we have seen, has been a very successful approach. However, certain difficulties have arisen. It has become apparent that responses to antibiotic therapy in infections will vary with individuals, and with the individual's own ability to resist infection; and this variation could not always be explained on the basis of specific immunity. Some strains of animals, for example, were refractory to certain highly infectious agents; some animals of the same species could be infected readily; others were markedly resistant to experimentally introduced agents. There seemed to be relationships between seasons of the year and attempts to produce infection. The very young and the very old are notoriously more susceptible to infection than young adults. Thus it is apparent that there may be many important factors unrelated to specific immunity which may play a role in determining the predisposition or resistance of the host to any one infection. There has been a tendency, therefore, in recent years to shift attention, not entirely but at least in part, from the causative agent to the host. One of the greatest stimulants to this has been the advent of adrenocorticotropin, hydrocortisone and the other steroids. It has been known for years that adrenalectomy renders the host extremely susceptible to a variety of toxic and infectious agents, while the administration of adrenal cortical extract may restore the normal resistance of the adrenalectomized animal. A vast number of experiments have been done to determine the effect of adrenal cortical and adrenal corticotropic hormones on infection. It has been found that these hormones exert no protective action. Actually in most instances, particularly with the virus type of infection, it has been shown that these hormones possess the opposite effect; namely, the enhancement of infection. It has been demonstrated that in many types of infection the effects of ACTH and of cortisone

CHOICE OF ANTIBIOTIC ON BASIS OF ETIOLOGIC AGENT

ORGANISM	EXTRAOCULAR INFECTION	INTRAOCULAR INFECTION
Cocci		
Staphylococci	Bacitracin Erythromycin	Penicillin Erythromycin
Pneumococci	Penicillin Sulfonamides	Sulfonamides Tetracycline
Streptococci	Tetracycline* Furacin Sodium Proprionate	Chloramphenicol
Gonococci	Penicillin Sulfonamides	Penicillin Sulfonamides
Meningococci	Tetracycline*	Tetracycline
Bacilli		
H. Influenza	Tetracycline* Sulfonamides	Streptomycin Chloramphenicol
Koch	Chloramphenicol Neomycin Polymyxin Streptomycin	Polymyxin Tetracycline
Proteus Vulgaris	Streptomycin Sulfonamides Chloramphenicol Polymyxin Tetracycline* Sodium Proprionate	Streptomycin Sulfonamides Chloramphenicol Polymyxin Tetracycline*
B. Pyocyaneus	Polymyxin Streptomycin Chloramphenicol	Polymyxin Streptomycin Chloramphenicol
E. Coli	Streptomycin Sulfonamide Chloramphenicol Neomycin	Streptomycin Sulfonamide Chloramphenicol Neomycin
Kleb. Pneum.	Streptomycin	Streptomycin
Diphtheria	Penicillin Tetracycline	Penicillin Tetracycline
Tularemia	Streptomycin Chloramphenicol Tetracycline*	Streptomycin Chloramphenicol Tetracycline
Morax Axenfeld	Tetracycline* Neomycin Chloramphenicol Streptomycin	Streptomycin Chloramphenicol Tetracycline
B. Petit	Tetracycline* Chloramphenicol	Tetracycline Chloramphenicol
Clostridia	Penicillin Sulfamylon	Penicillin Sulfonamides

CHOICE OF ANTIBIOTIC ON BASIS OF ETIOLOGIC AGENT (CONTINUED)

ORGANISM	EXTRAOCULAR INFECTION	INTRAOCULAR INFECTION
Brucella	Chloramphenicol Tetracycline Streptomycin Sulfonamide	Chloramphenicol Tetracycline Streptomycin Sulfonamide
Tuberculosis	Streptomycin Para-amino-salicylic acid Isoniazid Terramycin	Streptomycin Para-amino-salicylic acid Isoniazid Terramycin
Tetanus	Penicillin	Penicillin
Spirochete - Syphilis	Penicillin Bacitracin	Penicillin
Granuloma Inguinale	Chloramphenicol Streptomycin Tetracycline	
Lymphogranuloma Venereum	Chloramphenicol Tetracycline Sulfonamide	
Rickettsia	Chloramphenicol Tetracycline	Chloramphenicol Tetracycline
Virus		
Inclusion Blenorrhea	Tetracycline Sulfonamides	
Trachoma	Tetracycline Chloramphenicol	
Epidemic Kerato-Conjunctivitis	Tetracycline Chloramphenicol?	
Herpes Simplex	None	
Herpes Zoster	None, except to prevent secondary infection	
Toxoplasmosis	Daraprim (2-4 diaminopyrimidine) Sulfonamides	Daraprim Sulfonamides
Actinomycosis	Penicillin Tetracycline	Penicillin Tetracycline
Leptothrix (Wocordia)	Sulfonamide	Sulfonamide

*The Tetracyclines actually differ in their abilities to some degree but can be grouped together for a general classification.

SUMMARY TABLE OF SELECTION OF ANTIBIOTICS ON BASIS OF INFECTING ORGANISM

INFECTING AGENT	TETRACYCLINES (AUREOMYCIN) (TERRAMYCIN) (TETRACYN) (ACROMYCIN)	BACITRACIN	CHLORAMPHENICOL	PENICILLIN	POLYMYXIN	STREPTOMYCIN	SULFONAMIDES	SISOMYCIN	FURACIN	SODIUM PROPIONATE	ERYTHROMYCIN ARGOMYCIN
Bacteria											
Grain positive	+++	++	++	++	-	++	++	+	++	++	++
Grain negative	++	-	++	-	++	++	++	++	+	+	-
Virus											
Inclusion Blenorrhea	+++			+++			+++				
Trachoma	+++			+++			+++				
All other											
?											
Rickettsia	++		++								

and compound F are similar, but it should be recalled that there are differences between ACTH and cortisone. ACTH stimulates the adrenal cortex as a whole, thus apparently eliciting the production of a number of hormones in addition to cortisone or compound F. Cortisone, on the other hand, when administered, produces a depression of the function of the adrenal cortex, thus apparently depriving the body of adrenocortical hormones other than cortisone. The differences between the effects of ACTH and cortisone may thus be due to the ability of some adrenocortical hormones to oppose the action of cortisone. There are certain effects one can expect from cortisone, hydrocortisone or ACTH. The beneficial actions anticipated would be those of reduced signs of inflammation. One cannot expect these hormones to have any bacteriostatic or bactericidal action on the affecting agent. The deleterious actions which can be anticipated are interference with the natural resistance of the host and, possibly by reducing the increased permeability of the blood-aqueous barrier, reduction to some degree of the penetration of the various antibiotics that might be used in the therapy of intraocular infection.

Innumerable combinations of antibiotics with cortisone or hydrocortisone have been prepared and are widely used by ophthalmologists today. These are employed particularly for external ocular diseases such as conjunctivitis, episcleritis, keratitis and blepharitis. They are used with the hope of cutting down on the inflammatory reaction and shortening the convalescent period of the patient by virtue of the steroid content, and of overcoming any possible infection or secondary invader by the antibiotic in the combination. Clinically this combination is dangerous when one might be dealing with a herpes keratitis, which notoriously does badly in most

THERAPY OF OCULAR INFECTIONS

	TYPE OF APPLICATION	FREQUENCY	SUGGESTED ANTIBIOTIC WHEN NOT BACTERIOLOGICALLY GUIDED
Blepharitis	Ointment Wet pack with chosen solution	1-3 times daily	Bacitracin Neomycin with or without hydrocortisone Polymyxin Sulfonamides
Conjunctivitis	Ointment Solutions	Depends on severity. More rapid recovery with use of frequent instillations. Solutions during day, ointment at night.	Bacitracin Neomycin with or without hydrocortisone Polymyxin Sulfonamides
Special Ophthalmia Neonatorum	Solution Systemic	Drops every 10 minutes for first few hours, then lengthen intervals.	Penicillin
Purulent Ophthalmia of Adults			
Keratitis			
Severe	Subconjunctival injections and systemic administration.	Daily	If organism not known, first penicillin and/or streptomycin; second chloramphenicol. If possibly pyocyaneus etiology, not bacteriologic evidence but proteolytic appearance, polymyxin or streptomycin
Less Severe	Drops Ointment and Cotton Packs or Iontophoresis or Powder of Antibiotics	Hourly Nightly Twice daily Once daily dusted into lesion	
Infected Socket	Solution or Ointment	3 times daily	As for conjunctivitis, may add enzymatic debridgement, e.g. streptokinase, streptodornase (varidase)
Intraocular Infections	Subconjunctival plus Systemic when both are needed for adequate intraocular levels	Every 12 hours Every 6-8 hours	Prophylactic: first penicillin and streptomycin systemically and subconjunctivally; secondly chloramphenicol. Active Therapy: first penicillin and streptomycin; second chloramphenicol
Orbital Infections	Systemic, need not be massive doses	Every 6-8 hours	First, penicillin and streptomycin; second, tetracycline
Lacrimal Sac Infections	Solutions Direct into Sac. Systemic, need not be massive doses.	Every two hours Once Every 6-8 hours	First, bacitracin, neomycin, polymyxin mixture locally. Second, tetracycline

TOLERATED TOPICAL SOLUTIONS AND OINTMENTS OF ANTIBIOTICS

ANTIBIOTIC	SOLUTION CONCENTRATION/CC.	OINTMENT CONCENTRATION/GRAM VEHICLE
Penicillin	1,000-10,000 units	1,000-10,000 units
Crystalline Penicillin	5,000-1,000,000 units	10,000-1,000,000 units
Streptomycin or Dihydrostreptomycin	5,000-20,000 mcg.	5,000 mcg. to 10 mg.
Aureomycin (Chlortetracycline)	2.5-5 mg. (buffer)	1-10 mg.
Terramycin (Oxytetracycline)	2.5-10 mg. (buffer)	2.5-10 mg.
Tetracycline	2.5-10 mg.	2.5-10 mg.
Chloramphenicol	1-2.5 mg.	1-5 mg.
Bacitracin	500-2,000 units	500-2,000 units
Polymyxin B	500-5,000 mcg.	500-2,000 units
Erythromycin	2.5-10 mg.	2.5-10 mg.
Magnamycin or Carbomycin	2.5-10 mg.	2.5-10 mg.
Neomycin	2.5-5 mg.	2.5-5 mg.
Sulfamylon	10 mg.	10 mg.
Gantrisin Sodium	40 mg.	40 mg.
Sulfacetamide Sodium	100-300 mg.	100 mg.
Sulfadiazine	10 mg.	10 mg.
Isoniazid	50-100 mg.	50-100 mg.

instances under steroid regimens, particularly in the acute phases. This combination might do badly where the host resistance would be able to overcome the infection alone, and where the antibiotic has no specific effect on the organism. In other words, the steroidal substance might interfere with the resistance of the host sufficiently to allow the infecting agent to multiply more rapidly and harmfully. In dealing with external infections, this is not a great danger, for by constant observation of the patient the ophthalmologist can readily decide whether or not the lesion is progressing. At such a time he may stop his therapy and switch to other forms of treatment. At such a time he will no doubt resort to smear and culture studies if they have not been done previously and will then resort to more specific medication.

It has been amply demonstrated by Thygeson and his co-workers,[12] Woods,[14] Leopold and others,[9] that these agents have no specific antibacterial effect; that they do facilitate the spread of herpes lesions of the cornea and conjunctiva;

SOLUTIONS FOR SUBCONJUNCTIVAL INJECTION

Penicillin (Crystalline)	100,000-1,000,000 units/0.5-1 cc. May add adrenalin 1:1,000 0.3 ml.
Streptomycin	50,000-250,000 mcg./0.5-1 cc. Adrenalin 0.3 ml. of 1:1,000
Chlortetracycline Oxytetracycline Tetracycline	2.5 - 5.0 mg./0.5-1 cc. buffer
Chloramphenicol	1.2 mg./0.5 cc. of water or 25 mg./0.5 cc. of propylene glycol or 100-150 mg. microcryst./0.5-1 cc. with adrenalin
Polymyxin B	50,000-250,000 mcg./0.5-1 cc. with adrenalin
Bacitracin	10,000-50,000 units/0.5-1 cc. with adrenalin
Carbomycin	2.5-5 mg./0.5-1 cc.
Neomycin	5 mg.-10 mg./0.5-1 cc. with adrenalin
Erythromycin	2.5-5 mg./0.5-1 cc.

and that they have no beneficial effect on bacterial conjunctivitis and bacterial keratitis except for reducing the inflammatory signs. If the specific antibiotic will overcome the infecting agent, these steroids will not produce a harmful effect; in fact they will perhaps reduce the subjective symptoms for the patient, and the objective signs. If the infection is due to an organism not susceptible to the chosen antibiotic, the steroidal substances may interfere with the natural resistance of the host and thus interfere with rapid recovery.

SOLUTIONS FOR INTRACAMERAL INJECTION OR IRRIGATION

ANTIBIOTIC	CONCENTRATION
Penicillin	1,000-4,000 units/cc.
Streptomycin	500-5,000 mcg./cc.
Aureomycin Chlortetracycline Terramycin Oxytetracycline Tetracycline	2.5-5 mg./cc.
Chloramphenicol	1-2 mg./cc.
Neomycin	2.5 mgm./cc.
Polymyxin	1000 units/cc.
Carbomycin	1-2 mg./cc.
Bacitracin	500-1,000 units/cc.
Erythromycin	1-2 mg./cc.

In dealing with intraocular infections it may be difficult to decide whether or not to use the steroidal substances. Again the most to be gained would be the reduction of the inflammatory reaction. This may be important in intraocular inflammation, for the smaller the amount of inflammatory reaction, the less intraocular tissue damage results, and the less subsequent visual loss. In the past, only a very few eyes, if any, with intraocular infection have improved by virtue of the host's resistance alone, once they have reached the stage where the clinical diagnosis can be made. In fact, even with the advent of antibiotics, many of these eyes are lost. Antibiotic therapy will sometimes lead to control of the infectious agent, only to have the eye visually lost by virtue of the marked and severe inflammatory reaction. Therefore, if some method could be found for reducing the inflammatory reaction while the specific antibiotic acted, it is conceivable that visual loss might be reduced. For this reason steroidal substances may play a role in intraocular infection, particularly posttraumatic or post-surgical. Perhaps one

SYSTEMIC ADMINISTRATION AND INITIAL DOSAGE FOR INTRAOCULAR PENETRATION

ANTIBIOTIC	INTRAMUSCULAR	INTRAVENOUS	ORAL
Penicillin Crystalline	1,000,000 units twice daily	1,000,000 units initially combined with intramuscular	In addition-Carinamide 3 gm.
Streptomycin and Dihydrostreptomycin	2 grams initially then 1 gram twice daily		
Tetracyclines Chlortetracycline (Aureomycin)	Too painful	10 mg./kilo body weight up to total dose of 1 gram. Do not exceed 50 mg./minute. Aureomycin HCl with sodium glycinate as buffer. Use 1 gram Aureomycin to 20-50 cc. diluent initially and then once daily thereafter.	3 grams?* 1 gram every 8 hours.
Oxytetracycline	Too painful	20 mg./kilo body weight up to 1 gram. Do not exceed 50 mg./minute. Dilute each 0.25 gm. (contains sodium glycinate) with 100 cc. 5% glucose in water initially and once daily thereafter.	3 grams? 1 gram every 8 hours.
Tetracycline	100-250 mgm. Every 8 or 12 hrs.	20 mg./kilo body weight up to 1 gram. Do not exceed 50 mg. per minute. Dilute each 0.25 gram (contains sod. glycinate) with 100 cc. 5% glucose in water initially and once daily thereafter.	3 grams? 1 gram every 8 hours.
Chloramphenicol	100 mg. microcrystals/kg. body weight. Dissolve 2 gm./5 cc. saline initially and once daily thereafter.	Not necessary	3 grams initially 1 gram every 8 hours thereafter.
Sulfonamides Sulfadiazine } Sulfamerazine }			2 grams initially 1 gram every 8 hours thereafter
Erythromycin			Same initial dose 0.4 gram every 6 hours.

*According to Saubermann this will give intraocular levels.

should use antibiotic substances alone immediately after establishing the diagnosis of an intraocular infection. If no improvement occurs with the antibiotic substance within 24 hours, it is evident that another antibiotic must be chosen. It is known that if the infection persists more than 24 or 48 hours, there is a great deal of visual loss even if the infection is controlled subsequently. Therefore, at this point, ACTH therapy can be instituted, along with the new antibiotic. ACTH is perhaps superior to cortisone or hydrocortisone in that it mobilizes other adrenal steroids as well as cortisone or hydrocortisone. These other adrenal steroids may have some resistance-enhancing properties in themselves, and may counteract some of the deleterious action of cortisone and hydrocortisone on infection. This latter is purely theoretical. This is an unsolved problem at the present moment, and awaits further study.

SUMMARY

Successful use of antibiotics in ocular infection depends on proper diagnosis. One must be certain that infection exists, and if possible the responsible organism should be determined. The physician should be guided in his selection of antibiotics by bacteriologic study wherever possible. It is important to realize that whatever agent is chosen, it must be used in adequate concentration. Choose the route of administration which is the least bothersome to the patient, which will definitely deliver the antibiotic to the infected tissue in adequate concentration, and that can be given to the patient at the least cost and with the least possibility of developing toxic symptoms. The lack of response of an ocular infection to chosen therapy can be due to several factors, important among which are (1) the inadequate administration, and (2) the insusceptibility of the organism to the antibiotic. If the agent has been used in the proper concentration and by the proper route of administration and the infection does not subside, one can reasonably assume that the organism is not susceptible to the antibiotic selected; therefore, a switch to another antibiotic must be made quickly. The accompanying tables are planned with the hope that they will facilitate the proper selection and route of administration for the antibiotic for each type of ocular infection.

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Symposium: Antibiotics Up to Date

THE RATIONAL USE OF ANTIBIOTICS IN OTOLARYNGOLOGY

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THE therapeutic development and exploitation of the antibiotic agents have paralleled the same phases of their antecedents, the chemotherapeutic compounds. If the administration of these various antimicrobials had been discriminative and rational, or even perhaps without deleterious consequences, a symposium such as this would have no place on a program for this Academy.

Many of us remember some of the early reports in 1937 and 1938 of cures of patients with septic meningitis after the use of Prontosil or Sulfanilamide. As the specificity of the drugs for streptococci and staphylococci became more firmly established, the scope of chemotherapy was expanded. Then, with the discovery of other sulfa compounds and the assurance of their relative safety in the treatment of severe infections, chemotherapy for mild infections rapidly gained popular usage. Acute tonsillitis and acute otitis media responded promptly in most instances. Otologists realized that many of the cases of acute otitis media could be prevented by early administration of chemotherapy to a patient with septic tonsillitis or nasopharyngitis, and that in the same manner, cases of otitis media often could be aborted. It was the indiscriminate employment of these compounds, such as their telephonic prescription for earache, their use as a substitute for myringotomy in cases of suppurative otitis media, and their administration for headache, fever, hoarseness, and rhinorrhea of various types and etiologies, that prompted the institution of symposia of the kind in which we are now engaged. I participated in one in November 1941 at the Section on Otolaryngology of the American College of Surgeons during the Clinical Congress held in Boston. In my presentation I quoted Kolmer,[6] who stated in his address before the American Laryngological Association in Annual Session in Atlantic City, May 1941:

> Chemotherapy is not merely the treatment of disease with chemical agents; that is as old as the art of medicine itself. Rather it is the treatment of diseases produced by living pathogenic organisms with specific chemical agents or drugs capable of selectively destroying them without serious toxic effects.

I added the comment:

> When a drug is found to be efficacious in the treatment of one type of infection, it does not necessarily follow that it will be of equal benefit in all infections. Yet such a discovery is prone to bring about indiscriminate and empirical usage of the compound. This has happened to a great extent in the case of the sulfonamide drugs.[7]

In 1941, the otolaryngological literature was replete with articles on the use of the various chemotherapeutic agents in acute infections encountered in otolaryngological practice. The therapeutic scope of the agents was described carefully; their toxic manifestations, limi-

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tations, and contraindications to administration were recounted explicitly by various medical authorities. How effective was this conscientious effort to curb the indiscriminate use of these drugs? The answer, I am certain, can be found in an analysis of the sale of nose drops, lozenges, and even chewing gum medicated with the sulfa drugs for variously rationalized therapies.

Now we are on this platform to discuss the "Rational Use of the Antibiotics in Otolaryngology." Most of what was said between 1940 and 1945 regarding the indications, limitations, and abuses of the chemotherapeutic agents would be appropriate to this discussion.

The dramatic entry of penicillin into the combat against pyogenic infection is well known to all of you. The tremendous decrease in morbidity and mortality after injuries in World War II is recognized as one of the great epochs in Military Medicine. When penicillin was made available for civilian use, its almost miraculous antimicrobial powers were utilized to the fullest extent. But again, the empirical and indiscriminate usage of this new and powerful weapon rapidly became widespread. This was by no means limited to penicillin, for as each new antibiotic made its appearance, it found broad application. Indeed, it was necessary that new agents be found because more and more strains of organisms, particularly the staphylococci, were becoming resistant to penicillin and likewise to each succeeding new antibiotic which became available. It is estimated at this time that about 80 per cent of staphylococci cultured from infections arising in hospitals are penicillin resistant. This is probably related to the high mutation rate found in staphylococci. Many strains of streptococci also have developed a penicillin resistance but this is much less marked than in the case of staphylococci. It is currently believed that about 95 per cent of the strains of pneumococci are still susceptible to penicillin. Streptomycin seems to be the greatest offender in producing resistant strains of organisms. The so-called broad spectrum antibiotics seem less likely to produce resistant strains. Despite resistance developed by the staphylococci, penicillin remains the "work horse" of the antibiotics and is probably the most widely used one today. The antibiotic output reached 1,320,000 pounds in 1952.[8] This included 462,000 pounds of penicillin, which on the basis of 1,500 units per milligram means an amazing number of units. In fact, enough to give every man, woman and child in the United States about 2,000,000 units. Of course we realize that much of this penicillin has been used abroad and in laboratory work.

At this juncture I wish to assure you that I am not opposed to the use of antimicrobials. My experience with them has been extensive and most gratifying. The preceding remarks have been merely introductory to a plea for their rational employment. Before attempting to outline such a program, permit me to state some authenticated facts which should be of assistance in this effort.

1. Kern[5] in 1953 stated that there had been fifteen anaphylactic deaths reported in a year and a half from penicillin sensitivity. He commented that penicillin causes anaphylactic death more frequently than foreign serum injections. He stated further that penicillin heads the list of medicinal agents in frequency, diversity, and severity of sensitivities which it produces. Most people who show any type of sensitivity reaction to penicillin will give a history of previous penicillin therapy. Thus many unnecessary sensitizations are produced by promiscuous use of this

preparation. In spite of the many sensitization reactions caused by penicillin, the toxic reactions are far fewer than those noted after administration of the so-called broad spectrum antibiotics.

2. None of us can deny that there is promiscuous use of all of the antimicrobials. Nor are we, as otolaryngologists, entirely without blame. I am sure that each of you can recall patients who have been given various antibiotics, and particularly penicillin, for headache, chronic hoarseness, chronic sore throat, and other symptoms produced by neoplasms, foreign bodies, and allergies.

3. The oral administration of penicillin is less apt to cause sensitization than parenteral injection.

4. Penicillin dust and penicillin lozenges are most apt to cause sensitization reactions.

5. Nose drops containing antibiotics are useless in the treatment of suppurative sinusitis and equally useless because of their lack of specificity in the treatment of the common head cold.

6. Combined antibiotic therapy must be used with caution. Flippin[3] in commenting on the increasing number of bacteria, notably staphylococci, which have become resistant to the antibiotics, cautioned that polyantibiotic therapy could be effective if there is synergism but would bring about undesirable results in the case of antagonism.

7. Toxic and allergic reactions to the various antibiotics are well known to all of you and need not be recounted here. However, they must be remembered and borne in mind by everyone administering these agents.

8. All of the antimicrobials may mask the symptoms of diseases such as mastoiditis, sinus thrombosis, and epidural abscess to the extent that the accurate diagnosis of a lesion demanding surgical interference becomes most difficult. Our diagnostic criteria must be re-evaluated and made more flexible in the light of this fact.

9. Inadequate antibiotic therapy by means of ill chosen preparations, insufficient dosage, or premature termination of treatment may favor a smoldering chronic infection and give rise to organism resistance to the agent. Hearing loss in children due to low grade chronic inflammation and resulting scar in the middle ear after apparent recovery from an acute infection is an example of undesirable results which may be obtained from this type of therapy. As expressed by Schenck,[9] in discussing the indiscriminate use of the antibiotics in acute otitis media, "The ear mechanism does not necessarily return to normal merely because the fever is reduced and pain disappears."

10. New and unusual infections in the field of otolaryngology have appeared as the result of antibiotic therapy. These have been stressed by Schenck,[9] who has commented on the increasing incidence of moniliasis, and of pseudomonas and proteus infections in association with the administration of the newer so-called "broad spectrum" antibiotics. He warns otolaryngologists that the development of a new flora of nonsusceptible or resistant organisms must be anticipated during antibiotic therapy and that bizarre and unfamiliar lesions appearing in the upper respiratory tract must be assessed in this light.

11. The production of immune bodies is suppressed if every minor infection is treated promptly with the antimicrobials. This is probably not a specific suppression but is dependent upon the minimum amount of antigen available to the host during antibiotic therapy.

12. The need of antibodies for the complete elimination of the parasite from the host has been well demon-

strated by Eagle[2] in streptococcal infection in mice treated for a limited time with penicillin. A similar need for antibodies in typhoid fever patients treated with chloramphenicol has been demonstrated by Italian workers.[4]

With these facts before us, well known as they are, why should there be any indiscriminate, abusive, or inadequate usage of these great agents which have done so much to increase our life expectancy? A few of the reasons may be enumerated here but each of you will think of others.

1. The empirical use of the antibiotics seems definitely to indicate that something is deficient in the management of the illness at hand. Perhaps the inability to make an accurate diagnosis, the absence of adequate laboratory facilities, or a mere disinclination to take time to evaluate the problem properly are the factors which lead the physician along the path of least resistance. Failure to resist demands by the patient or relatives to administer the "new wonder drugs" is a weak alibi and fortunately an influence which is rapidly becoming less potent. It is now encouraging to note that mothers frequently express doubts and apprehension about their children having taken one or more of the antibiotics most of the winter for colds and repeated earaches.

2. Inadequate use must be the result of careless or unintelligent observation and attention to the patient during his illness; in other words, neglect. A shot of penicillin and advice to return if no improvement ensues is a prime example of this.

3. Abuse and indiscriminate use is inexcusable and indicates carelessness, lack of scientific rectitude, and loss of the art of physical diagnosis. If these agents are given before a definite diagnosis is made, symptoms may be so masked that a proper diagnosis will be unduly delayed.

It is deplorable that the necessity should arise for mentioning these medical shortcomings. It is up to us as scientifically minded otolaryngologists to impress upon our colleagues the extreme importance of the discriminate and rational administration of our antibiotic agents.

The outline of this rational usage in otolaryngology can be brief:

Use antibiotics in only those infections which are severe enough to warrant off-the-job disability. Moderate sore throat and mild acute sinus infections in the wake of a head cold are usually short term, self limited conditions which will get well with simple supportive measures and which incidentally produce some valuable immune bodies in the process. Every patient with acute suppurative otitis media does not demand such therapy. In the pre-sulfa days more than 95 per cent of them recovered after myringotomy, rest, and general supportive treatment. It is true that the antimicrobials greatly decrease the morbidity of acute suppurative otitis media and therefore it has been suggested by some authorities that all such conditions should be treated in this manner at the outset. One of my colleagues in arguing this point asked me if I would wait until my house were nearly consumed by flames before calling the fire department. My answer, of course, was in the negative but I hastened to add that I would also refuse to permit an entire company to chop holes in the roof and flood the place if there was a small blaze at the kitchen stove.

Antibiotics should be given with proper timing. Many acute ear infections can be aborted by the antibiotic treatment of an acute streptococcal or staphylococcal infection of the

throat or nasopharynx. If the acute otitis media develops in the absence of a severe upper respiratory infection and is not producing pronounced general reactive symptoms, antibiotics may not be (in fact very frequently are not) required. If there is pus in the middle ear, it must be drained by myringotomy! Antibiotics are no substitute for the surgical drainage of pus from a cavity. Fever, leukocytosis, pain, and the presence of profuse seropurulent discharge at the onset indicates the advisability of immediate antibiotic therapy. Otherwise, it is perfectly safe to wait for two or three days before starting such treatment. In fact, there may be some advantages in so doing, for if either the sulfa compounds or the antibiotics are employed in adequate dosage before antibodies are formed, they must be used more intensively and over a longer period of time.

Essentially the same criteria may be used in determining the required therapy for acute bacterial infections in the pharynx, larynx, nose and sinuses. The amount of fever, pain, leukocytosis, and general malaise should indicate to the physician whether or not specific therapy is necessary. Of course, the expected decrease in morbidity would render specific therapy desirable in every such case were it not for sensitization, toxic effects, side reactions and other complications. It goes without saying that the physician who makes this decision must likewise possess the ability to make a reasonably accurate clinical diagnosis in the field of otorhinolaryngology.

Having decided upon the desirability, if not the dire necessity, of antibiotic therapy, the choice of agent is the next problem. The multiplicity of available preparations sometimes causes confusion in selection for individual cases. Every effort should be made toward specificity of action; and ideally sensitivity tests should be done routinely against penicillin and a few of the broad spectrum antibiotics. If local application is to be considered, neomycin and bacitracin should be included, for their combined use is often effective in some of the mouth and throat lesions. Admittedly, it is not always feasible nor practicable to conduct such studies in every patient. One can usually venture a shrewd guess that penicillin might be effective in the ordinary rapidly developing acute follicular tonsillitis, suppurative sinusitis or suppurative otitis media accompanied by fever and leukocytosis. If definite abatement of signs of infection is not obvious in forty-eight to seventy-two hours, aureomycin or terramycin should be substituted and the sensitivity tests done at once. With penicillin sensitivities widespread as they are, one must obtain a history referable to previous penicillin administration and its effects. A history of any sensitivity reaction demands a scratch test and an intracutaneous test if the former is negative. In fact, it would be well to do such tests on every patient who has taken penicillin on some previous occasion.

One should make an effort to avoid combined antibiotic therapy whenever possible. In certain instances this is advisable, but the combination must be known not to be antagonistic. Antagonism has been demonstrated when penicillin is combined with aureomycin or terramycin. Examples of synergistic action are seen in the combination of penicillin with streptomycin used topically on wounds or for systemic administration, and also in the combination of neomycin and bacitracin.

How long should antibiotic therapy be continued? There is no specific rule in this regard but it is my personal conviction that if an antibiotic agent is indicated at all in an acute pyogenic infection, its use should be continued in full

and adequate dosage for at least five days. Beyond this period it should be continued for at least two days after the signs of acute infection have subsided in order to give the defenses of the host an opportunity to eliminate the organism from the body completely. This, of course, presupposes adequately frequent examination and intelligent observation of the patient during treatment. Needless to say, in certain diseases, and particularly in specific granulomatous infections, treatment must be continued for months.

One glaring mistake made all too frequently is the prolonged or repeated use of these agents in otitis media in infants and young children. Myringotomy and a timely well-done adenoidectomy are of the same great value that they were in pre-antimicrobial days.

Dr. R. Bishop Canfield[1] used to teach that a patient with an acute otitis media who required repeated myringotomies needed a mastoidectomy. In my opinion, the use of antibiotics has not nullified this dictum. A child may be kept afebrile and reasonably comfortable on antibiotics and biweekly myringotomies, but an adenoidectomy and perhaps a simple mastoidectomy in many instances would effect a prompt cure.

Time will not permit a detailed discussion of prophylactic antibiotic therapy. It has an acceptable place both preoperatively and postoperatively in selected instances where contamination of the operative field is almost certain. Its routine use in such procedures as tonsillectomy, submucous resection of the septum, and short procedures in clean fields about the face and neck is to be condemned.

Before closing, I cannot refrain from reminding you that the sulfa compounds are still of great value and should not be replaced entirely by the antibiotic preparations. If employed in the same intelligent manner that should characterize the use of the antibiotics, they have some advantages in the treatment of many of the acute pyogenic infections.

In summary then, the rational use of antibiotics in otolaryngology implies specific selection of the patient, the infection, and the antimicrobial agent, based upon clinical, bacteriological, and immunological data. Results of such rational therapy are laudable and gratifying for this selection involves a patient requiring specific treatment, who is receiving the correct agent in adequate dosage over the necessary period of time, by way of the most advantageous and efficient routes of administration.

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Symposium: Antibiotics Up to Date

THE DEVELOPMENT OF BACTERIAL RESISTANCE TO ANTIBIOTICS

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ALTHOUGH quinine and the arsenicals have been known to be of value in the treatment of certain human infections for over fifty years, the era of modern chemotherapy clearly began in the middle 1930's, with the discovery of the sulfonamides. This series of drugs was widely introduced and eagerly used with high hopes that they were the key to the end of many infectious diseases. And so it seemed for a time. Within several years, however, disturbing reports began to appear. Gonorrhea, which was almost uniformly cured in a very short period, became more and more unaffected by treatment. From 1936 to 1942, in the New York City Health Department, quick and easy cure rates in this disease gradually dropped from about 90 per cent to 30 per cent. It was soon shown by test tube studies that the gonococci were developing high degrees of resistance to the bacteriostatic effect of the drugs, and that this accounted for the treatment failures. The same situation developed with bacillary dysentery. Most of these infections were highly susceptible to the sulfonamides when the drugs were first introduced. When their use became widespread in a given area or institution, however, resistance to therapy or prophylaxis soon followed.

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Here, also, the clinical resistance was completely correlated with the in vitro resistance to the drug by the microorganism. Streptococcal disease showed the same pattern. The early value of sulfonamides in this infection was largely prophylactic. Because of the seriousness of these diseases in the Armed Forces during the last world war, large scale programs of prophylaxis were carried out. These were quite effective at first, and for his part in these studies Dr. Alvin Coburn was awarded the Wellcome Prize in 1944. It is rather ironic that within six months to a year, resistant streptococcal strains had appeared and spread with alarming rapidity through the naval training camps.

While these events were transpiring, penicillin was rediscovered and was becoming available to the general population in ever-increasing quantities. However, even with penicillin, which in so many respects seems to be an ideal drug, the passing years have revealed the increasing resistance to this agent by at least one species of pathogenic organism, *Staphylococcus aureus*. Dr. Wesley Spink and a number of other investigators have concerned themselves with this problem. The following data are adapted from studies carried out by Dr. Maxwell Finland,[3,5] who is doing much of the current work in this field. The rapidly changing pattern of resistance can be clearly seen (table I).

Soon after penicillin was introduced, streptomycin was discovered and used

TABLE I
CHANGING PATTERN OF PENICILLIN RESISTANCE BY STAPHYLOCOCCUS AUREUS STRAINS

CONCENTRATION OF PENICILLIN (μg/ml)	% STRAINS RESISTANT TO PENICILLIN		
	PRE-PENICILLIN ERA (BEFORE 1946)	1948-49	1951-52
0.04	15	80	85
1.6	5	50	75
25.0	0	35	70
100	0	25	65
400	0	0	50

rather widely. This antibiotic, of course, was effective against many bacterial species not acted upon by penicillin. With streptomycin, however, only a relatively short period was needed to reveal the development of drug resistance. Even in individual patients, bacterial resistance developed with unhappy frequency and rapidity. A report by the Council on Pharmacy and Chemistry of the A.M.A. in 1948[1] showed the frequency of development of streptomycin resistance in treated tuberculosis patients. Over 95 per cent of strains collected from patients before therapy was started were inhibited by streptomycin in vitro at a concentration of 10 μg/ml. Many of these were sensitive to even one tenth of this amount. After two months of streptomycin therapy, 40 per cent of the strains were resistant to the 10 μg/ml level, and after four months about 70 per cent were similarly resistant. Many of the latter were resistant to ten times or one hundred times these concentrations. The resistance, once developed, seemed permanent regardless of cessation of therapy. One wonders in future years how many new tuberculous infections will be caused by these resistant organisms.

Other infectious agents can develop resistance quite rapidly to streptomycin. In another study of Finland's group,[4] the extremely rapid appearance of resistance by two bacterial pathogens in one patient within a period of days was demonstrated. The patient was a 64 year old male with chronic pyelonephritis due to B. Friedlander *(Klebsiella pneumoniae)* and B. pyocyaneus *(Pseudomonas aeruginosa)*. Prior to treatment, both organisms were rather susceptible to streptomycin, being inhibited by 6 and 12 units/ml respectively. Despite the maintenance of streptomycin in the urine at levels from 150 to 1,200 units/ml, by the second day of therapy the B. Friedlander had become resistant to more than 50,000 units/ml. By the fourth day the B. pyocyaneus had become similarly resistant. Again, it may be noted that the resistance of these organisms persisted for at least twenty days after cessation of therapy on the sixth day.

Following streptomycin, aureomycin and terramycin made their entry. Although these drugs are of fairly recent development, it already seems clear that similar patterns are beginning to emerge. The next table, adapted again from data of Finland,[3,5] shows the shifting pattern of resistance of staphylococci to this drug (table II).

With regard to terramycin, similar changes in pattern of resistance of staphylococci have also been found by Finland's group,[3] and by Koch and Bourgeois.[8] In addition, Jablon and Taran[7] have recently demonstrated an almost uniform development of resistance to terramycin in coliform organ-

TABLE II

CHANGING PATTERN OF AUREOMYCIN SENSITIVITY OF STAPHYLOCOCCUS AUREUS

AUREOMYCIN CONCENTRATION (μg/ml)	% STRAINS RESISTANT TO AUREOMYCIN	
	PRE-AUREOMYCIN ERA (BEFORE 1949)	1951-52
2.4	15	35
4.8	10	35
12.5	3	30
25	3	30
50	3	25

isms of the gastrointestinal tract during streptococcal prophylaxis of the upper respiratory tract with this drug. In passing, it may be emphasized that a number of studies have shown cross resistance among terramycin, aureomycin and chloramphenicol to be quite common.

Isoniazid has recently made its appearance in the treatment of tuberculosis. The resistance pattern that has developed closely parallels that found for streptomycin. Results presented by Dr. Coates[2] in 1953 showed that prior to therapy about 97 per cent of the tubercle bacilli isolated were sensitive to isoniazid. After twelve to fourteen weeks of treatment, however, 70 per cent to 80 per cent of the strains had become resistant. As with streptomycin, the percentage of highly resistant organisms increased as therapy was continued. Also, as with streptomycin, the drug resistance persisted long after the cessation of therapy.

What are the biological mechanisms by which such changes in drug sensitivity occur? This problem, of basic importance, has received a large amount of intensive study. It seems most likely from these investigations that evolutionary forces are operative. As a simplified hypothetical illustration, for example, let us take an abscess containing several billion staphylococci. If we could test the antibiotic sensitivity of each of these bacteria, we would expect to find a variability within limits in this respect, before any exposure to the drug. This situation is presented graphically in figure 1.

Perhaps half of the ten billion organisms would be inhibited by 0.4 units/ml of the particular antibiotic, the average sensitivity of this entire population. Ten per cent might require 0.5 units/ml, and another 10 per cent might require only 0.3 units/ml. One tenth of one per cent might be susceptible to only 0.8 units/ml, and another 0.1 per cent could be inhibited by as little as 0.1 units/ml. One thousandth of one per cent may be insensitive to all levels below 1.6 units/ml. If to this patient we now administer the antibiotic so that a level of 0.8 units/ml is reached in the abscess, it is immediately apparent that all of the organisms sensitive up to this level will be inhibited or killed. The group resistant to this or higher concentrations will continue to multiply, and from it a new population will form. This new population will also show variability among its members, but the average resistance will be somewhat higher than the original population. If we now give more antibiotic, so that perhaps a level of 3.2 units/ml is reached in the abscess, the same chain of events will occur, and another population will grow out with

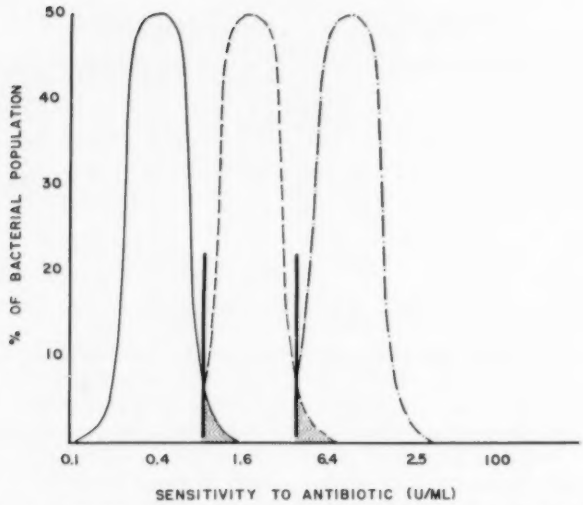

FIG. 1—Hypothetical distribution of antibiotic sensitivities in a bacterial population, and the effect of administration of the antibiotic at levels which do not completely eliminate the entire population.

still higher average drug resistance. It is conceivable that the ease and rapidity with which drug resistance develops is related to the width or narrowness of these curves.

How long can we expect these resistant strains to persist in the general population? We know from "in vitro" studies that drug resistance is usually a fairly permanent attribute of microorganisms. We also know from short term studies, such as those quoted here, that drug resistance by bacteria in human patients may be a rather stable characteristic. With regard to the long term problem, the only clear evidence we may cite is with regard to the sulfonamides. With these drugs, recent observations by the Armed Forces have shown that bacillary dysentery, prevalent in Korea[6] and in the Navy, is still highly resistant to sulfonamides. Although we may hope that bacterial strains resistant to penicillin and newer antibiotics will not persist as long, the available evidence unfortunately suggests we had best be prepared for the worst.

It is possible, however, to make some suggestions on theoretical and experimental grounds for minimizing the development of resistance in patients.

1. It would seem wise to use high doses, rapidly achieved where this is possible. In addition, it is suggested that prolonged therapy be kept to a minimum. The evidence strongly indicates that low dosages given for long periods of time provide the conditions most favorable for the development of resistance.

2. It is suggested that more studies be carried out with the use of antibiotic combinations in therapy. Despite some investigations indicating antibiotic antagonisms under certain limited conditions, theoretical considerations indicate that combinations of drugs may be of extreme value in delaying or preventing the emergence of resistant variants. A

few reports have already supported this view.

3. It seems wise to continue the search for new antibiotics which act by mechanisms different from those already known. Practicing physicians should be kept up to date on the changing sensitivities of pathogenic bacteria, and of the potentialities of the newer antibiotics as they appear.

Lastly, I would like to point out the striking analogy of these phenomena and those occurring in the insect world. Both probably take place by the same mechanisms. Recent years, for example, have seen the rapid development of resistance to DDT by house flies, mosquitoes and now even body lice.

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Symposium: Antibiotics Up to Date

THE RATIONAL USE OF ANTIBIOTICS IN THE GENERAL PRACTICE OF MEDICINE

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THE basic guiding principle for administering an antibiotic to any patient is the reasonable assurance that the antibiotic will alter the course of a given disease favorably for the patient. Whether or not an antibiotic is of benefit for a given disease is based upon accumulated clinical experience. Therapy with the antibiotics is most intelligently applied when the etiologic agent of a disease is known. While precise bacteriologic and immunologic information is always highly desirable in the treatment of disease, such data may not be available, and it is then that the clinical judgment and experience of the physician are so important in deciding not only whether an antibiotic is indicated but also what antibiotic or antibiotics should be selected. It is sound medical practice to select penicillin for the treatment of exudative pharyngitis due to hemolytic streptococci, but it may be catastrophic to administer only penicillin to a patient with a diphtheritic membrane in his pharynx. Although the etiologic agent may be clearly established, the mildness of an illness may influence the physician in withholding antibiotic therapy that would be clearly indicated for a more severe infection. This cautionary note may be introduced by two factors: the cost of the antibiotic and the potential toxic effects of the drugs. Fortunately, competition in the pharmaceutical industry, and the gigantic productive scale, have made all the antibiotics relatively inexpensive. And while the physician may rightly exhibit apprehension over the toxic effects of the antibiotics, it is remarkable how relatively few serious reactions occur when one considers how radically these drugs have changed the outlook for many severe and fatal bacterial diseases. And so, because of the low cost of the antibiotics, and because of the relatively small proportion of serious side effects caused by these agents, properly selected antibiotics should be administered for even the milder infections when the etiologic agent is known. Mild pharyngitis of hemolytic streptococcal origin will subside spontaneously in the vast majority of cases. But the prompt use of adequate amounts of penicillin in some instances may prevent more severe suppurative complications, such as sinusitis or otitis media, and more important, may prevent the late nonsuppurative diseases, acute rheumatic fever or acute glomerulonephritis. The prompt use of an antibiotic for a small furuncle may prevent a devastating and fatal staphylococcal septicemia. However, I cannot subscribe to the indiscriminate and empirical use of antibiotics in mild disease of questionable etiology, or for certain viral diseases, such as the common cold. The discomfort and undesirable toxic effects caused

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by the drugs are out of proportion to the doubtful benefits that might follow their administration.

In any general discussion of the antibiotics, an attempt should be made to answer two questions: what are the clinical indications for each of the antibiotics? and, how much and by what routes are they administered? Time does not permit a detailed answer to these questions. Also, brevity may be mistaken for dogmatism. I shall rely for the most part upon the clinical experience of my associates and myself, realizing that others may offer a different experience with equally good results.

TYROTHRICIN

Tyrothricin is a crude preparation and gramicidin is the active agent. This antibiotic has considerable limitations. It is active therapeutically only against gram-positive coccal infections, and it can only be used topically. Hence, tyrothricin has been used most advantageously in skin lesions and infections of the mucous membranes of the eye and nasopharynx.

PENICILLIN

Penicillin is a remarkable antibiotic. After more than ten years of clinical trial, it is still the drug of choice for many infectious diseases. During this time only one species of bacteria has posed a serious clinical problem because of the appearance of penicillin-resistant strains, and that is the staphylococcus.

In our experience at the University of Minnesota Hospitals, therapy has had to be discontinued in not more than 2 per cent of the patients receiving penicillin because of undesirable reactions to the drug.

Penicillin is the antibiotic of choice for the following infections:

1. Infections due to Group A hemolytic streptococci
2. Most infections due to alpha and gamma streptococci, including subacute bacterial endocarditis and infections of the urinary tract
3. Pneumococcal infections, including lobar pneumonia and meningitis
4. Gonorrhea
5. Syphilis
6. Staphylococcal disease, though its usefulness has been seriously deflated because of the appearance of resistant strains
7. Actinomycosis
8. Anthrax

I do not know of a single strain of Group A hemolytic streptococcus, pneumococcus or gonococcus that has posed a serious problem of therapy because of the appearance of organisms that are resistant to the action of penicillin.

A large number of penicillin preparations are now available and the antibiotic may be administered in various ways and by several routes. For severe systemic disease I prefer to administer aqueous solutions of crystalline G penicillin in divided intramuscular doses. For prophylactic purposes, mild infections and for some streptococcal and gonococcal infections, slow absorbing preparations may be employed, such as procaine penicillin and DBED dipenicillin G ("Bicillin"). Penicillin preparations are definitely effective when administered orally, and such a route has distinct advantages in children. I do not employ continuous intramuscular or intravenous infusions of penicillin. Some controversy is attended upon the intrathecal use of penicillin. I have never seen any harm result from doses up to 20,000 units a day when introduced intrathecally.

Penicillin has been employed in combination with other antibiotics and with sulfonamides. This will be discussed shortly.

STREPTOMYCIN AND DIHYDROSTREPTOMYCIN

Streptomycin and dihydrostreptomycin have the same therapeutic properties. They differ in their toxic effects on the eighth nerve. Streptomycin causes vestibular dysfunction, whereas dihydrostreptomycin results in hearing loss. These toxic effects are related to dose. With but very rare exceptions, a total daily dose of 2 gm. of either drug should not be exceeded. Even under these circumstances, patients have been encountered who developed vestibular toxicity within the first week of treatment. It is generally agreed that for long-term therapy streptomycin is to be preferred. For short-term treatment I select dihydrostreptomycin. Some advocate a combination of equal parts of streptomycin and dihydrostreptomycin, which reduces the risk of damage to the eighth nerve. These antibiotics are not absorbed when administered by mouth. Intramuscular injections are employed.

Streptomycin in combination with other agents has been extraordinarily effective in the therapy of tuberculosis. It is still the drug of choice for tularemia and some infections of the urinary tract due to gram-negative bacilli. In combination with other drugs, streptomycin is quite effective for meningitis due to *H. influenzae,* brucellosis and disease due to *Klebsiella pneumoniae.*

TETRACYCLINE DRUGS

The so-called broad spectrum antibiotics include chlortetracycline (aureomycin) and oxytetracycline (terramycin). More recently, an antibiotic closely related to these two drugs has become available known as tetracycline and distributed as achromycin, tetracyn or panmycin. Tetracycline has essentially the same therapeutic value as its closely related predecessors, but it causes less gastrointestinal disturbances.

The remarkable feature of the tetracycline agents is that they are effective against gram-positive and gram-negative bacterial infectious, spirochetal diseases, rickettsial infections and some viral diseases. Furthermore, the preparations can be administered effectively by mouth. The total daily oral dose need not exceed 2 gm. When administered intravenously, 300 to 500 mg. is given slowly every 8 to 12 hours to an adult, or 5 to 10 mg. per kilogram of body weight to children.

When one encounters a febrile disease, probably infectious and of doubtful etiology, the tetracycline drugs can be administered either alone or in combination with other agents. In this manner, a wide variety of infectious diseases may be treated. These drugs are particularly valuable to the physician in general practice who encounters patients in the home with an upper respiratory infection of doubtful etiology.

CHLORAMPHENICOL

Chloramphenicol, or chloromycetin, is another broad spectrum antibiotic, not quite as inclusive in its therapeutic effectiveness as the tetracycline group. It is the best agent for the treatment of Salmonella infections, or typhoid and paratyphoid fever. Chloramphenicol is sometimes very valuable in the treatment of infections due to the Proteus species of bacteria. Many choose this agent for the therapy of meningitis due to *H. influenzae.* Chloramphenicol is also of considerable benefit in the treatment of staphylococcal disease, in which the organisms are resistant to other agents.

Chloramphenicol does rarely cause serious depression of the bone marrow resulting in aplastic anemia. It is administered orally and intramuscularly in larger doses than those recommended

for the tetracycline drugs. The total daily dose approximates 4 gm. for adults.

ERYTHROMYCIN

Erythromycin has a narrower range of antibacterial activity, and is particularly useful for gram-positive coccal infections, especially against staphylococci, which are resistant to other antibiotics. It is probably the most effective agent against *C. diphtheriae,* and should be combined with antitoxin in the treatment of diphtheria. Total daily oral dose of 2 gm. appears to be sufficient for most purposes.

BACITRACIN

Bacitracin is an antibiotic of very limited application, being used almost exclusively for severe staphylococcal disease, especially for those infections in which the bacteria are resistant to other antibiotics. While bacitracin is nephrotoxic, we have not encountered serious renal dysfunction when the total daily intramuscular dose has not exceeded 80,000 to 100,000 units. It is not absorbed when administered orally or topically.

POLYMYXIN

Polymyxin is another antibiotic having a very narrow range of antibacterial activity. It is the antibiotic of choice for the treatment of severe infections due to *Pseudomonas aeruginosa* (Bacillus pyocyaneus). The drug has been life-saving in cases of suppurative meningitis due to this species when administered intramuscularly and intrathecally. Polymyxin can also be used topically.

NEOMYCIN

Neomycin has a very wide range of antimicrobial activity, probably more so than the tetracycline drugs. But, unfortunately, this antibiotic is both ototoxic and nephrotoxic when employed systemically. Complete and permanent loss of hearing has resulted from its use. Therefore, except under extremely urgent cricumstances, such as the therapy of staphylococcal disease due to antibiotic-resistant organisms, this drug should not be injected parenterally. When used topically or orally, neomycin is not absorbed. It has been valuable in the preoperative sterilization of the intestinal tract for elective surgery of the intestinal tract.

COMBINATIONS OF ANTIBIOTICS OR OTHER DRUGS

Brief consideration should be given to the question of the simultaneous administration of two or more antibiotics in the therapy of infectious diseases. Some controversy is associated with this practice because some investigators have stated that such combinations can be less effective than the administration of a single antibiotic. There is no doubt that as a result of *in vitro* experiments and observations in experimentally infected animals, such antagonism of antibiotic activity has been observed. However, I have never encountered any convincing evidence that this applied to the treatment of human disease. In fact, there is abundant clinical evidence that combinations of antibiotics are highly desirable. I am opposed to "shot gun therapy" in the treatment of infectious diseases, but when one is confronted by a desperately ill patient, where the etiology is in doubt, or where there is reason for believing that two or more species of micro-organisms are involved, then one is justified in using a combination of agents. For example, in the rupture

of a hollow viscus or appendix, in which the microbial flora of the gut may be poured into the peritoneal cavity, heroic measures are necessary. Under these circumstances, I have advocated the short-term use of penicillin, streptomycin and aureomycin—all given parenterally. But there are more definitive indications for combinations, as in the following diseases:

Pneumococcal meningitis: Penicillin and sulfadiazine

Meningococcal meningitis: Penicillin and sulfadiazine

Severe staphylococcal disease: Penicillin and bacitracin, or erythromycin

Tuberculosis: Streptomycin and paramino salicylic acid, or isoniazid

H. influenzae meningitis: Streptomycin and sulfadiazine or chloramphenicol

Brucellosis: Dihydrostreptomycin and tetracycline

Pneumonia due to *Klebsiella pneumoniae:* Streptomycin and sulfadiazine—possibly tetracycline

Severe infections due to Proteus species: Penicillin and chloramphenicol

LACRIMAL GLAND TUMORS: ROENTGENOGRAPHIC DIAGNOSIS

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TUMORS of the lacrimal gland most frequently involve bone and produce changes which can be demonstrated in roentgenographic films. These changes vary in appearance according to the duration and the type of tumor but are characteristic in location. Consequently, the roentgenographic examination is of especial value in diagnosis and has differential and prognostic significance as well.

Due in part to the rarity of lacrimal gland tumors, the role of the roentgenogram has heretofore been little appreciated. Standard textbooks either make no mention of roentgenographic findings[8,14] or make only incidental reference to them.[3,12]

Case reports of lacrimal gland tumors collected from the literature of the past fifty years reveal scant mention of roentgenographic examinations. Among those cases where roentgenograms are cited, the interpretation is given as negative in many cases.[1,4,9,11] The most commonly mentioned positive roentgenographic change is bone destruction.[2,5,7] Increased bone density is noted,[6] and unspecified bone involvement is included.[13] The first reported series of roentgenographic examinations reported an enlarged fossa in one and hyperostosis in a second case out of five patients. Two of the three cases in that series originally thought negative were later found positive.[10]

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The purpose of this paper is to emphasize the role of roentgenography in lacrimal gland tumors through an analysis of cases from the Institute of Ophthalmology of the Presbyterian Hospital in New York. All of the films reported here were read originally by the authors.

PRESENTATION OF CASES

The 20 cases which comprise this study are listed in tables I, II and III according to the pathologic diagnosis. Photographs depicting the positive roentgenographic findings are also grouped according to the pathologic diagnosis. The 2 cases in which roentgenograms showed nothing of significance are listed but the roentgenograms are not reproduced. The analysis of these cases from the viewpoint of roentgenographic findings is intended to reveal the scope of the roentgenogram for diagnosis, for differentiation, and for prognosis.

DIAGNOSIS

The present study is based upon 20 patients with proved lacrimal gland tumors. The roentgenograms of 18 of the 20 show the changes associated with lacrimal gland tumors. The two examinations which revealed nothing abnormal occurred in cases of slow-growing benign mixed tumors, and the probability that later examinations will show a pathologic condition must be borne in mind. This high percentage of positive

TABLE I

BENIGN MIXED TUMORS

PATIENT	AGE	HISTORY	ROENTGENOGRAPHIC FINDINGS
O.B.	39	Exophthalmos, 5 yr.	Enlarged fossa and slightly increased bone density
M.dM.	53	Exophthalmos, 3 yr.	No evidence of disease
L.G.	15		Enlarged irregular fossa
P.K.	52	Mass, recurrent, 15 yr.	Increased bone density. Rough fossa
A.R.	26	Exophthalmos, 3 yr.	Enlarged fossa and increased bone density
A.O.	35	Tearing, 5 yr. Exophthalmos, 2 yr.	Enlarged fossa and increased bone density
S.S.	67	Tearing and exophthalmos, 4 yr.	Enlarged fossa
V.S.	54	Exophthalmos, 6 yr.	No evidence of disease
C.Z.	25	Exophthalmos, 3 yr.	Enlarged fossa

TABLE II

CARCINOMA, ADENOID CYSTIC TYPE

PATIENT	AGE	HISTORY	ROENTGENOGRAPHIC FINDINGS
H.E.	41	Pain and mass, 1 yr.	Increased bone density
M.G.	36	Exophthalmos, 10 yr.	Increased bone density
P.H.	41	Exophthalmos, 1 yr.	Enlarged fossa with later increased bone density
N.P.	27	Exophthalmos, 6 yr.	Increased bone density
J.R.	21	Nodular mass, 3 yr.	Increased bone density
M.S.	42	Exophthalmos, 6 yr.	Increased bone density, and slight enlargement of fossa
J.T.	51	Pain and mass, 6 mo.	Bone atrophy

TABLE III

CARCINOMA, MISCELLANEOUS

PATIENT	AGE	HISTORY	ROENTGENOGRAPHIC FINDINGS
J.A.	58	Exophthalmos, 5 yr.	Thickening and increased bone density, later erosion
J.C.	58	Mass, several years	Bone destruction with slight increased density at edges
D.D.	76	Mass, 6 mo.	Large erosion with little evidence of increased bone density
P.S.	55	Mass, 2 yr.	Marked increased bone density with spicules and pressure atrophy

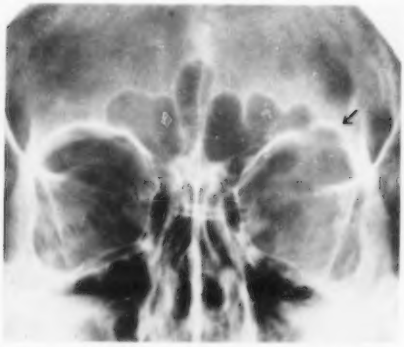

FIG. 1—C.Z. Enlarged lacrimal gland fossa.

FIG. 4—S.S. Enlarged lacrimal gland fossa.

FIG. 2—O.B. Enlarged lacrimal gland fossa.

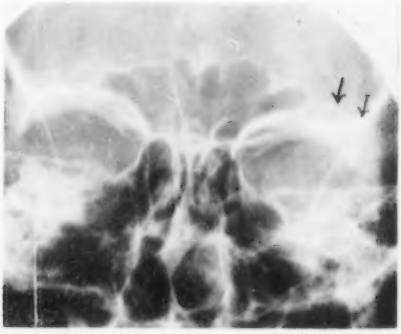

FIG. 5—A.R. Enlarged lacrimal gland fossa and increased bone density.

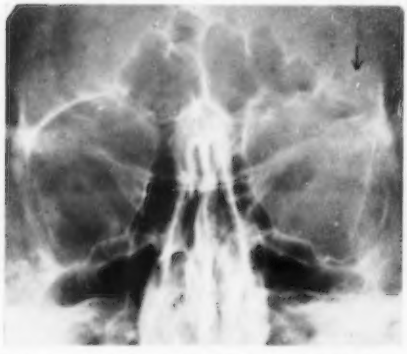

FIG. 3—L.G. Enlarged irregular lacrimal gland fossa.

FIG. 6—P.K. Increased bone density. Rough lacrimal gland fossa.

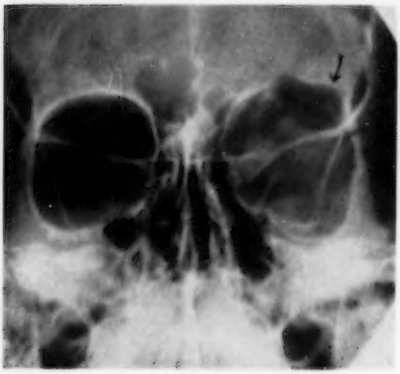

FIG. 7—A.O. Enlarged lacrimal gland fossa and increased bone density.

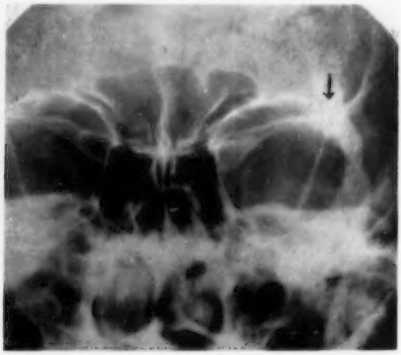

FIG. 8—M.S. Increased bone density

results (90 per cent) compares favorably with that obtained in any field of diagnostic roentgenology.

Four varieties of abnormal features are distinguished in the films. The first is the presence of an enlarged lacrimal gland fossa on the involved side (fig. 1). The bone cortex is intact. The way in which the fossa becomes enlarged is not known, and the present series of films is insufficient to demonstrate whether there is progressive enlargement of the fossa as the tumor grows. It may be that the deepened fossa is associated

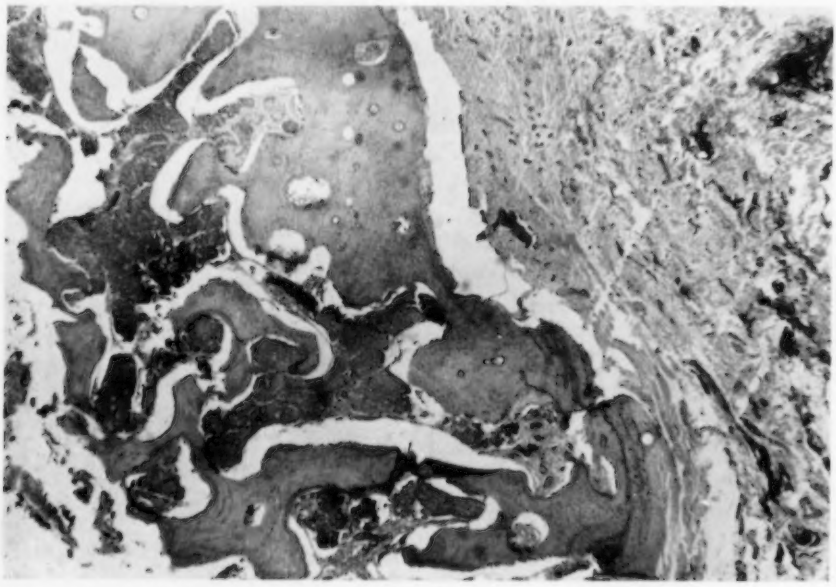

FIG. 9—M.S. Photomicrograph showing tumor cells invading bone.

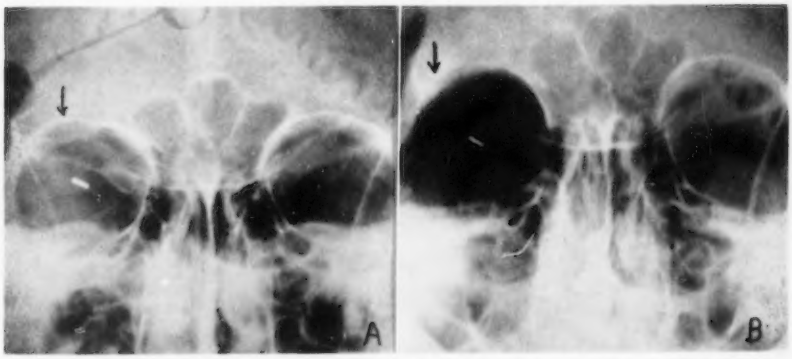

FIG. 10—P.H. A. Enlarged lacrimal gland fossa. B. Later development of increased bone density.

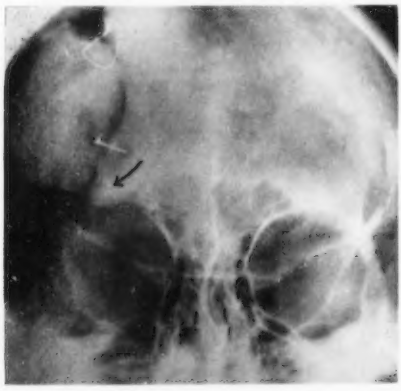

FIG. 11—M.G. Postoperative film showing increased bone density in the areas near the lacrimal gland fossa.

FIG. 12—N.P. Postoperative film. Increased bone density.

with the presence of a congenital rest in the lacrimal gland which later develops into a tumor. The second feature noted in the films is the presence of increased density in the bone adjacent to the lacrimal gland (fig. 8). This hyperostosis may be mottled but is usually homogeneous. It follows growth of the tumor cells into the bone. Presumably the irritation produced by the invading cells causes the hyperostosis (fig. 9). The third feature is a combination of the first two, that is, presence of an enlarged fossa together with hyperostosis (fig. 5). Films on the same case taken at various times indicate that the fossa was present first and that hyperostosis later occurred. The fourth abnormal feature noted in the films, and one which we have seen only once, is the presence of a large erosion of bone (fig. 17). The manner in which this is produced is not known.

DIFFERENTIAL VALUE

That the roentgenograms may offer help in predicting the various pathologic types of lacrimal gland tumors is suggested by the grouping of the present 20 cases according to three pathologic types. The benign mixed tumors, of which there were 9, had the following roentgenographic findings: Two cases were negative. All the remainder

FIG. 13—J. R. Postoperative film. Increased bone density.

FIG. 15—J.A. Thickening, increased bone density and erosion.

show an enlarged fossa on the affected side (figs. 1, 2, 3, 4, 5, 6, 7). In addition, 3 of these had increased bone density (figs. 5, 6, 7).

The 7 adenoid cystic carcinomas all show invasion of bone as manifested by increased density (figs. 8, 9, 10, 11, 12, 13). The presence of an enlarged fossa was not a prominent feature, but 1 case had this feature in addition to the increased density (fig. 10).

Three of the 4 carcinomas in the miscellaneous group showed bone invasion with hyperostosis, and 2 of these also

FIG. 16—P.S. Increased bone density and pressure atrophy.

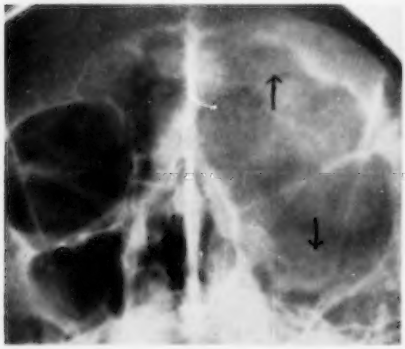

FIG. 14—J.C. Large area of bone destruction with slightly increased density at edges.

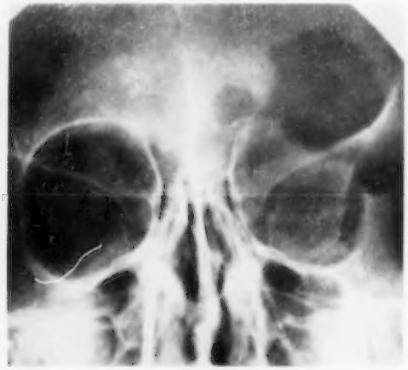

FIG. 17—D.D. Large erosion of bone without hyperostosis.

showed pressure atrophy (figs. 14, 15, 16, 17). The fourth case showed a large erosion through the bone of the frontal region, with irregular edges and no sign of hyperostosis (fig. 17).

The interpretation of the above roentgenologic features involves a consideration of the dynamics of the new growth as well as the cell-type. In the benign mixed tumors, there was usually no bone invasion at the time the patient came for roentgenograms. In the adenoid cystic carcinoma, more rapidly growing and more malignant, bone invasion was present in every case at the time the patient presented himself. A more advanced stage of invasion of bone, often with pressure atrophy, was found when the patient harboring an adenocarcinoma sought aid.

PROGNOSIS

Even though the pathologic type of a lacrimal gland tumor has been suggested by the roentgenographic appearance and has been established by biopsy, the patient's future course may vary within rather wide limits. Here, repeated roentgenographic examinations are especially valuable, for they document the behavior of the tumor as it occurs.

The presence or absence of bone invasion, the direction and extent of hyperostosis, and the presence or absence of pressure erosion help the surgeon plan the initial operation. Subsequent changes in the roentgenograms indicate when additional excision is needed and whether it is feasible. Roentgenograms are not infallible, and they are not the only guide to prognosis, but the evidence they offer deserves consideration along with other aids.

SUMMARY

The roentgenologic features in 20 cases of lacrimal gland tumors have been presented, and their importance in diagnosis, differentiation and prognosis has been emphasized. Particular stress has been laid on the opportunity which lies within the grasp of the ophthalmologist to benefit from all that roentgenology has to offer by early and repeated utilization of this valuable procedure.

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EPITHELIAL LACRIMAL GLAND TUMORS: PATHOLOGY AS A GUIDE TO PROGNOSIS

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RESULTS of the treatment of epithelial lacrimal gland tumors have in the past been unpredictable and often poor. This study demonstrates that the benign and malignant variants of lacrimal gland tumors can be distinguished histologically and on this basis the proper treatment can be determined.

Lacrimal gland tumors are relatively common among orbital tumors. In recent analyses of series of orbital neoplasms, tumors arising in the lacrimal gland were reported as the third to sixth most frequent single type of tumor, comprising 4 to 15 per cent (Reese,[6] Offret,[5] Forrest[2]).

The published concepts of the behavior of lacrimal gland tumors have changed through the years. Early studies consisted of isolated case reports and the impression was gained that epithelial lacrimal gland tumors, for which the collective term "mixed tumor" was generally used, were relatively benign (Warthin,[8] Lane[4]).

Complacency about the behavior of this tumor was shattered by Sanders' paper[7] in 1939 in which he reported on 12 cases and emphasized the uniform recurrence of the tumor. Sanders, as have others,[2] grouped all these epithelial lacrimal gland tumors as "mixed tumors," implying that the several morphologic types were in essence the same.

This concept is not consistent with the fact that some patients with these tumors may survive many years without recurrence while others develop severe bone erosion, intracranial extension, and metastases and die in short periods. General pathologists have long been aware of this variation of behavior in relation to tumors of the salivary glands, which resemble lacrimal gland tumors quite closely. Foote and Frazell[1a] report on 877 tumors of the major salivary glands and emphasize the manner in which the course of the disease varies with the histologic picture. The only study which has clearly recognized this fact in relation to lacrimal gland tumors is that of Godtfredsen[3] of Copenhagen, who reported on 10 cases. However, symptom-free patients were followed for an average of only fifteen months.

This study is an effort to evaluate the variable histologic picture as seen in specimens from the laboratory of the Institute of Ophthalmology, Presbyterian Hospital, New York.

PATHOLOGY

Twenty-six specimens of epithelial tumors of the lacrimal gland are included. These include tumors which previously have been grouped by some authors as "mixed tumor." Others, who have been more impressed by the aggressive behavior of some lacrimal gland tumors, have referred to all of these same tumors as "carcinoma." However, based upon the histologic appearance, 11 of the 26 cases in this study have been separated from the others and represent the true benign mixed

From the Institute of Ophthalmology, Columbia-Presbyterian Hospital, New York City.
Presented at the Fifty-Eighth Annual Session of the American Academy of Ophthalmology and Otolaryngology, Oct. 11-16, 1953, Chicago, Ill.

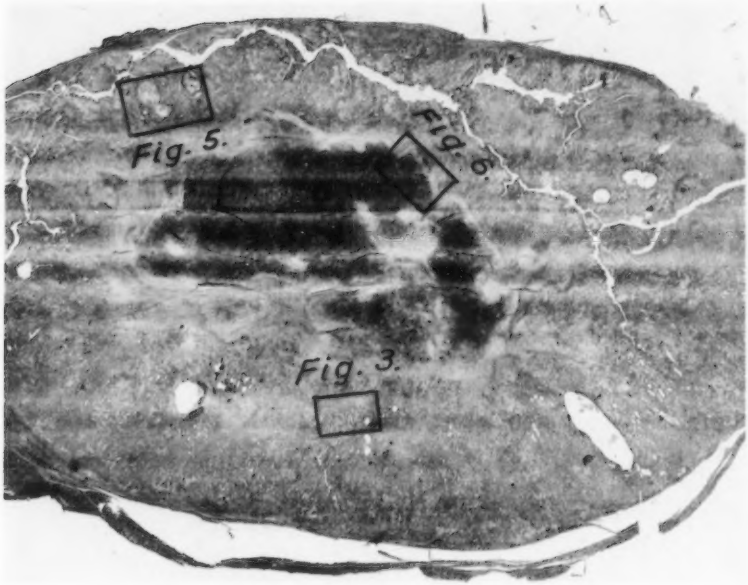

FIG. 1—Benign mixed tumor showing encapsulation.

tumors. The remainder are malignant epithelial tumors and are grouped as carcinoma.

Benign Mixed Tumor (11 specimens)

Histologically, the benign mixed tumor showed encapsulation (fig. 1) except in those instances in which the excision was only a part of the whole tumor, for purpose of biopsy. Cystic areas containing serous, mucinous secretion or blood were often present (fig. 2). In specimens of this group, which represents the true mixed tumor, are included tissue elements which run the gamut from the solid cellular areas of epithelial cells to cords of cells, including glandular areas, to the other end of the histologic spectrum comprised of dense connective tissue and cartilage.

The epithelial cells are usually cuboidal, often arranged in acini, and two-layered glands and ductules simulating the lacrimal ductule (fig. 3). These glands are of irregular contour and are multilocular with branchings. Solid cords of cells are also present, and in these the poorly defined cytoplasm may take a more deeply eosinophilic stain and may assume some of the characteristics of keratin (fig. 4). True epithelial pearls are sometimes present. The nuclei of the epithelial cells are usually vesicular and occasionally contain nucleoli. Keratin cysts may form. Occasionally in the keratin cyst the cellular lining is lost (fig. 5).

In addition to the epithelial elements there are the connective tissue areas which are disposed in histologic continuity with the epithelium. Cells resembling in every way the true fibroblast appear to stream from epithelium often without the separation of a basement membrane. These connective tissue-like cells are often stellate and polyg-

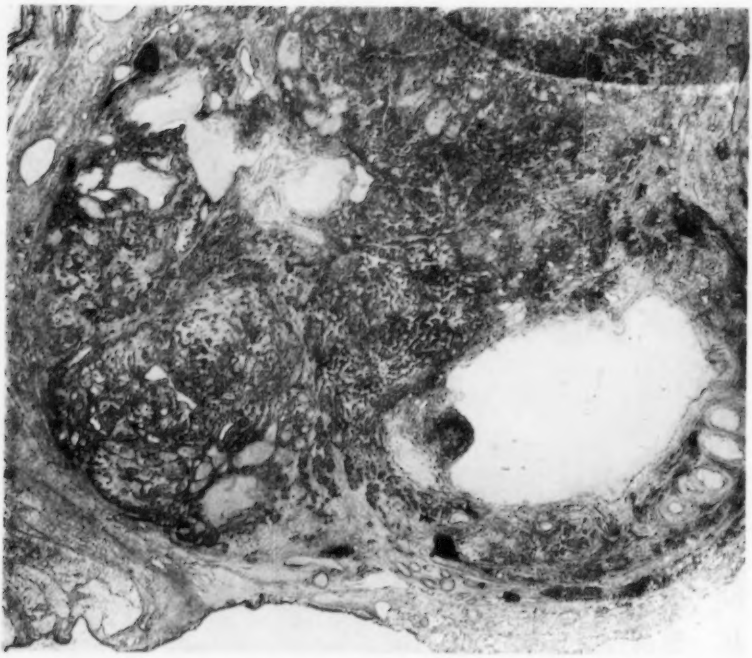

FIG. 2.—Benign mixed tumor showing cystic spaces.

FIG. 3.—Benign mixed tumor showing ductlike spaces.

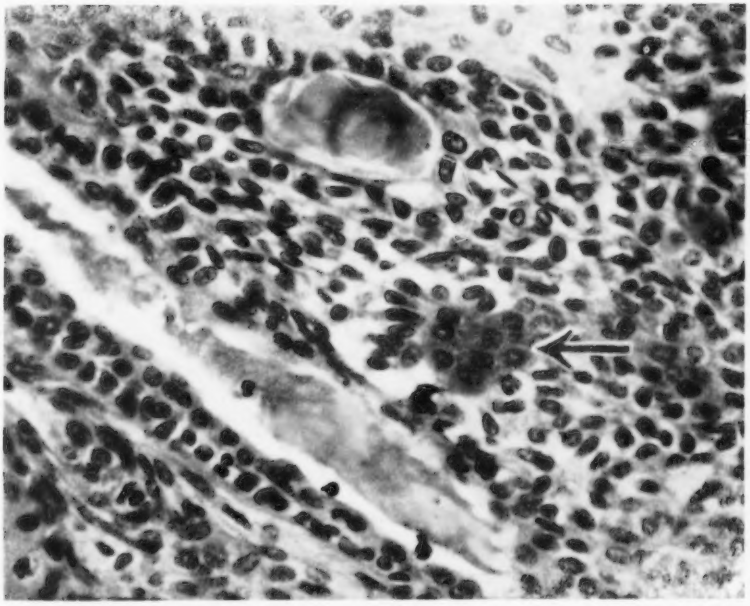

FIG. 4—Benign mixed tumor showing early squamatization.

onal or spindle and extend into the loose connective tissue stroma. Areas of dense connective tissue and typical cartilage are present (fig. 6). Calcium may be deposited, most commonly in the connective tissue capsule. Mitotic figures are not seen.

Carcinoma

Adenoid cystic type (10 specimens). Among the carcinomas, in addition to those in which the behavior has been generally known, are epithelial tumors which previously have been included by some authors with the mixed tumors. It is now clear that although several types exist, these are all malignant tumors. The adenoid cystic type of carcinoma is separated from the other malignant types by its histologic uniformity, by its frequency, and by its uniformity of behavior. Capsules are not usually distinguished, and under low power apparently isolated nodules of tumor are seen interspersed in the surrounding tissue. In the early stages of the tumor it is comprised of densely cellular areas which stain dark blue because of the close packing of the nuclei and of the sparse cytoplasm (fig. 7). At this stage it resembles very closely the basal cell carcinoma of the skin. As the tumor matures, cystoid areas make their appearance, giving the cellular areas a punched-out, or cribriform, appearance (fig. 8).

When these tumors are sectioned in the fresh specimen, these long, mucinous plugs are expressed; this prompted Billroth[1] to describe this tumor as a cylindroma. These cystlike, glandlike spaces

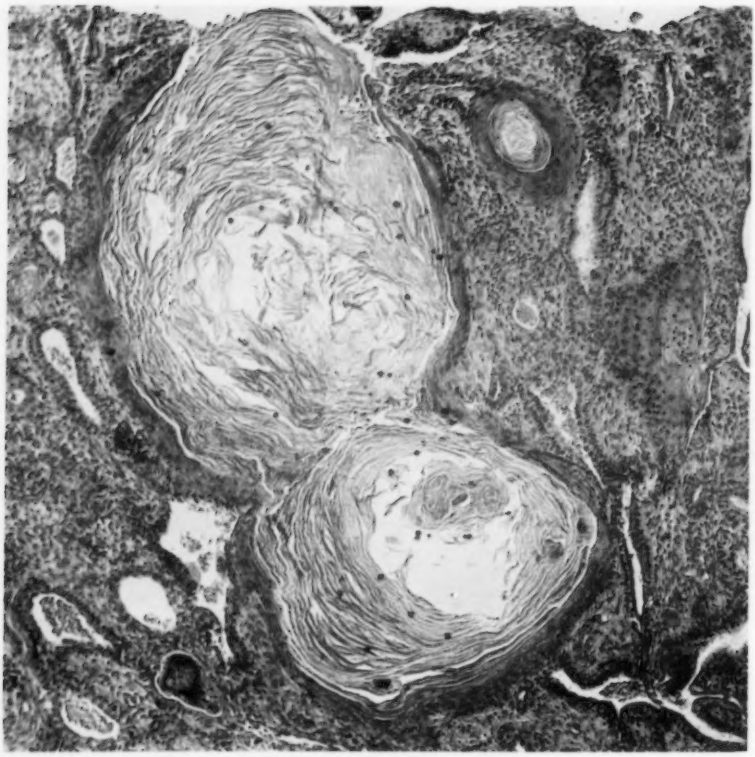

FIG. 5—Benign mixed tumor showing keratin cysts.

of the adenoid cystic carcinoma contrast with those of the benign mixed tumor in that they are quite uniformly round although they vary in size (fig. 9). The walls of the cyst are many cells thick, giving the impression that a solid mass pre-existed and that holes formed later. The connective tissue is adventitious stroma and not neoplastic; the epithelial tissue is sharply demarcated from the connective tissue, whereas, in the mixed tumor the separation is less distinct because cells stream into the connective tissue from the epithelial layers. The space in the connective tissue within which the cylindromatous tissue lies may have such sharp walls as to suggest that the border which contains the tumor existed before the mass made its appearance, and extension is indeed usually into lines of cleavage. As the tumor matures further, these cystlike spaces increase in size and finally crowd out the cells (fig. 10). In a very late stage, large, completely acellular, hyalinized areas are noted.

Frequently in pathologic specimens the tumor is seen extending into bone (fig. 11). Exenteration often failed because the tumor, having invaded bone, is incompletely excised unless specific effort is made to excise the involved bone.

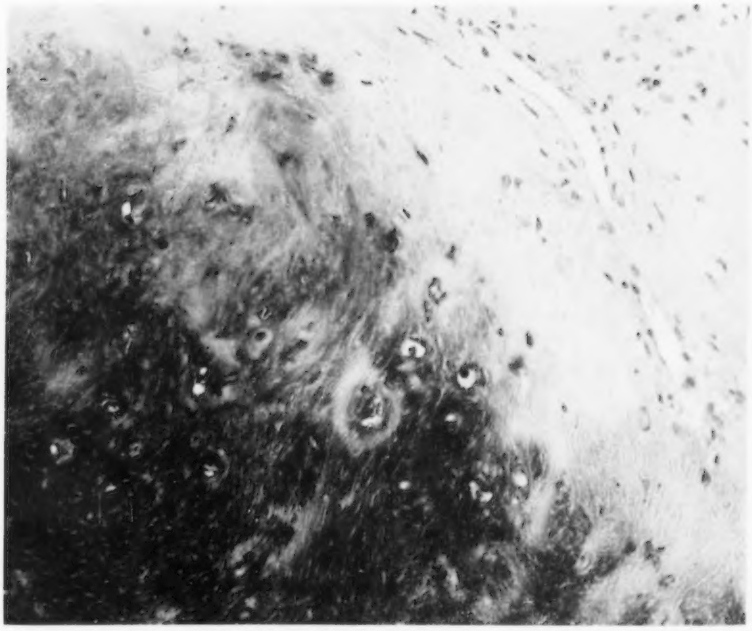

FIG. 6—Benign mixed tumor showing cartilage.

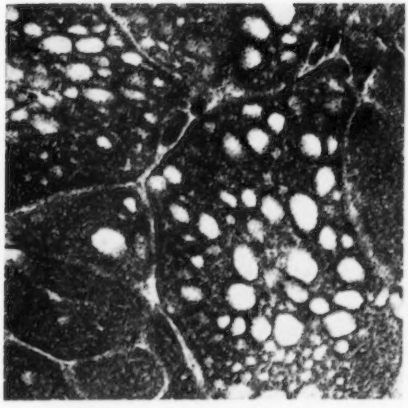

FIG. 7—Adenoid cystic carcinoma.

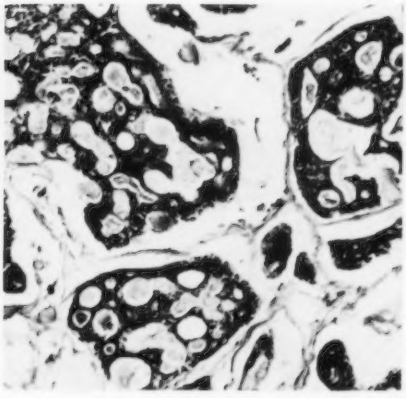

FIG. 8—Adenoid cystic carcinoma.

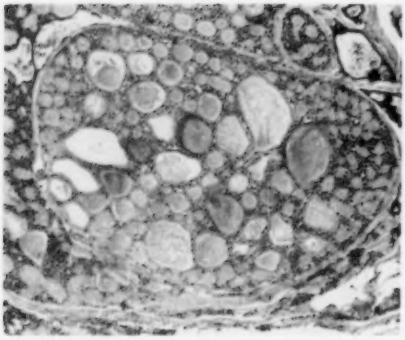

FIG. 9—Adenoid cystic carcinoma.

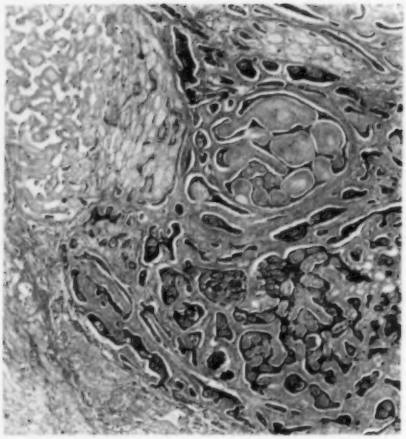

FIG. 10—Adenoid cystic carcinoma showing hyalinization.

The adenoid cystic carcinoma has a propensity for invading the lymph spaces (fig. 12) which surround nerves accounting for the frequency of pain and demonstrating another pathway for extension into soft tissue and bone. The highly invasive adenoid cystic carcinoma infiltrates the lid (fig. 13) and attempts at saving the skin of the upper lid are fraught with the jeopardy of recurrence.

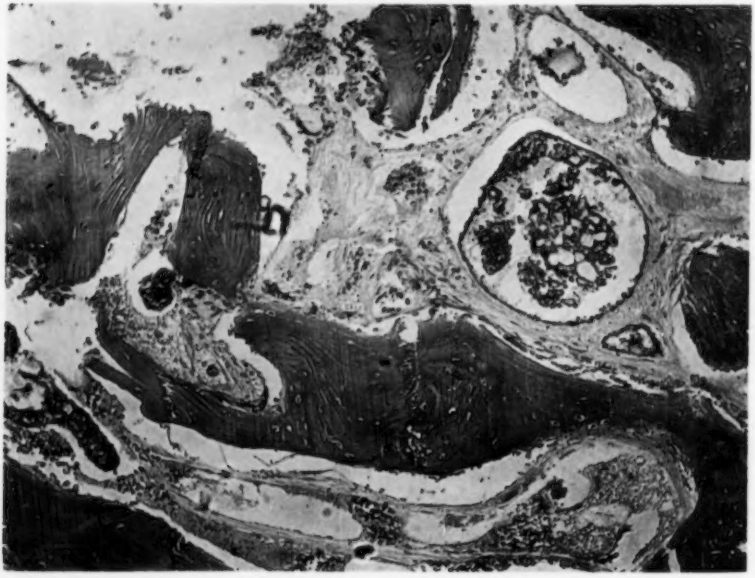

FIG. 11—Adenoid cystic carcinoma invading bone.

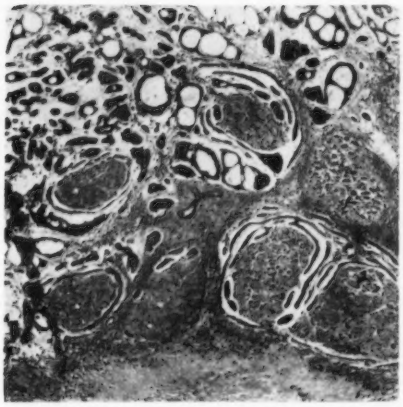

FIG. 12—Adenoid cystic carcinoma showing tumor about nerves.

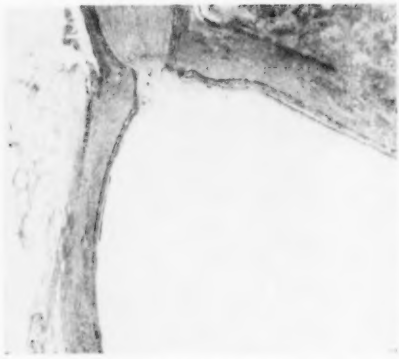

FIG. 14—Adenoid cystic carcinoma showing papilledema.

Flattening of the globe is seen, which accounts for increasing hyperopia (fig. 14) and striae in the retina. Papilledema from pressure on the venous outflow is present in some specimens (fig. 14). Invasion of orbital bone on one side of the tumor and episclera on the other renders the globe immobile (fig. 15). The tumor invades the base of the brain, and autopsy specimens show invasion of basilar structures including the pituitary gland (fig. 16). The propensity of the tumor to metastasize is correlated with the occasional finding of tumor in blood vessels (figs. 17 and 18). Regional lymph gland (cervical and preauricular) may be involved (fig. 19).

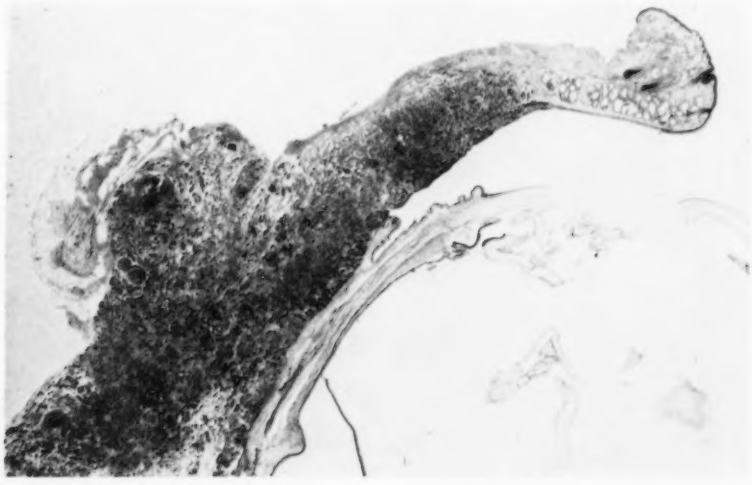

FIG. 13—Adenoid cystic carcinoma invading lid.

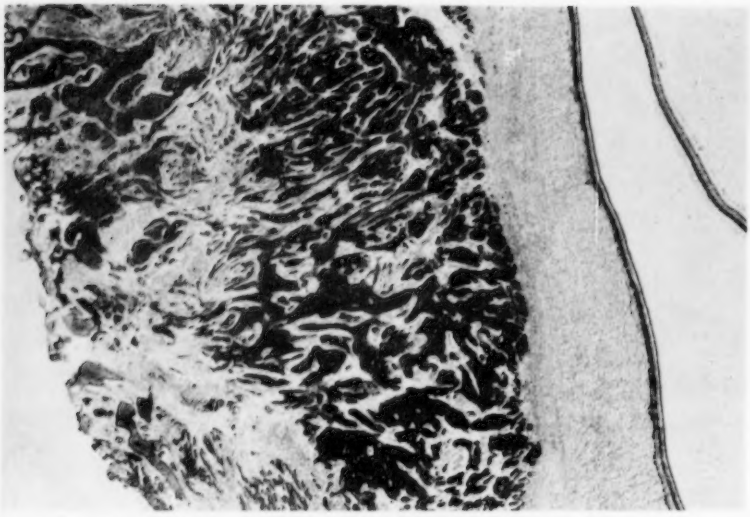

FIG. 15—Adenoid cystic carcinoma showing involvement of globe and orbital bone.

Miscellaneous types (5 specimens). Among the other types of carcinoma, a miscellaneous group, are included adenocarcinoma, squamous cell carcinoma, undifferentiated carcinoma, and malignant mixed tumor. In the adenocarcinoma (fig. 20) the cells are arranged in acini with nonspecific connective tissue between them. The tumor is invasive. Mitotic figures are prominent and nuclei are often densely staining.

A second variety is the epidermoid carcinoma (fig. 21) in which the eosinophilic cytoplasm of large cells resembles squamous epithelium. The tumor is usually immature and pearls and intercellular bridges are not identified.

Undifferentiated carcinoma shows the histologic characteristics of epithelial malignancy without features permitting of determining type of epithelium (fig. 22).

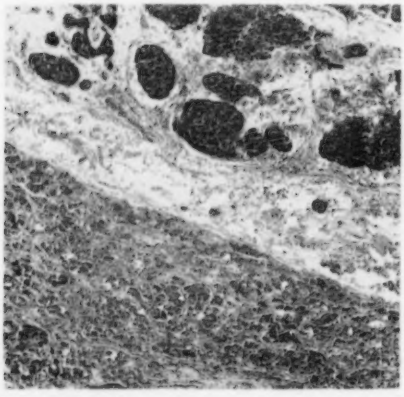

FIG. 16—Adenoid cystic carcinoma invading pituitary gland.

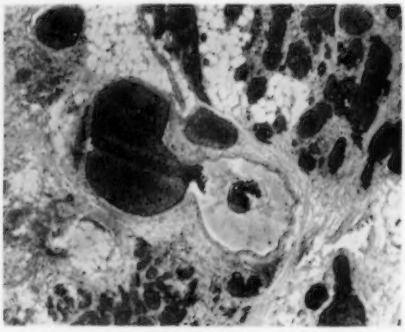

FIG. 17—Adenoid cystic carcinoma in blood vessel.

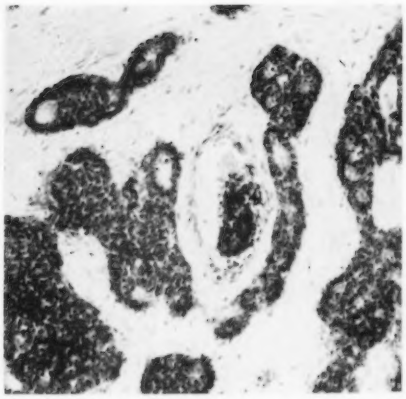

FIG. 18—Adenoid cystic carcinoma in blood vessel.

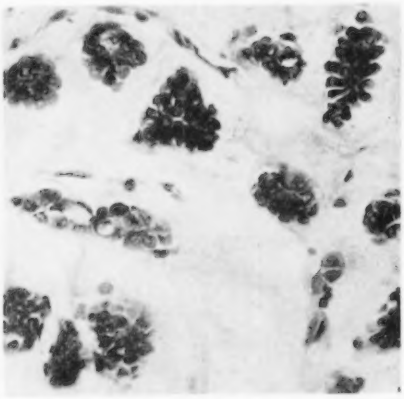

FIG. 20—Adenocarcinoma.

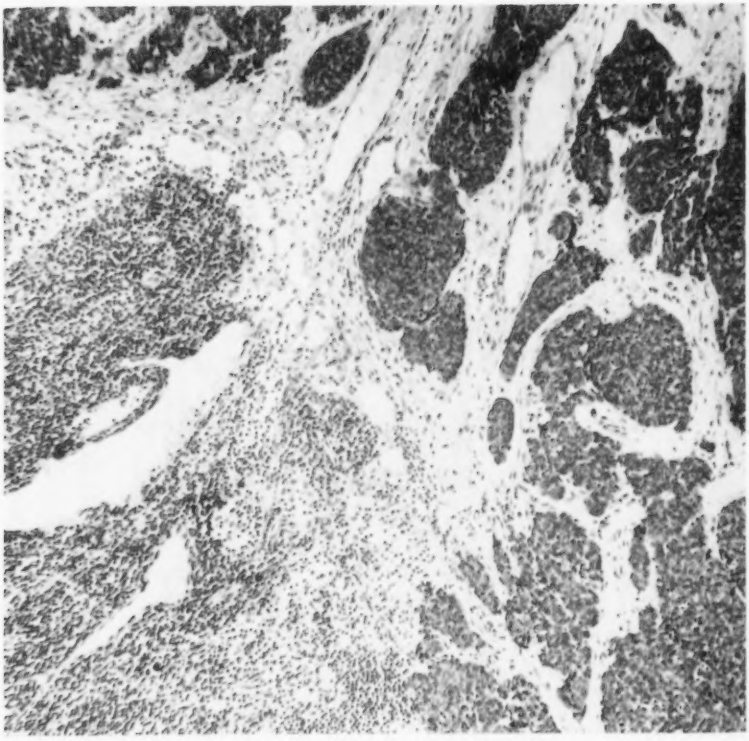

FIG. 19—Adenoid cystic carcinoma in pre-auricular gland.

TABLE I
CLINICAL HISTORIES OF PATIENTS TREATED FOR LACRIMAL GLAND TUMORS
AT THE INSTITUTE OF OPHTHALMOLOGY

PATIENT	AGE AT ONSET	SEX	LATERALITY	PRESENTING SYMPTOM	DURATION	EXOPHTHALMOS MM.	OTHER SYMPTOMS	PALPABLE MASS	SURGERY	OPERATIVE FINDINGS	RECURRENCE	CURRENT STATUS
BENIGN MIXED TUMOR												
O. B.	34	M	L	Tearing, Pressure	5 yr. 5 yr.	7 5	Eye displaced down and forward; limitation upward gaze	Firm small mass below orbital rim	1. Excision (canthotomy and transconjunctival	Tumor firmly attached in region lacrimal gland fossa intact to palpation		Well—16 yr.
A. R.	23	F	L	Exophthalmos	3 yr.	5 0		Small nodular mass on downward gaze	1. Excision (thru lid) 2. Exploration (21 mo. later)	Tumor delivered in capsule. Large mass extended posteriorly "inoperable." No biopsy		Well—21 yr.
V. S.	48	F	R	Exophthalmos Blurred vision	6 yr. 6 yr.	12 0	Eye displaced down and forward	Firm mass in region lacrimal gland	1. Biopsy 2. Exenteration	Tumor filled orbit. Entirely removed		Well
A. O.	30	F	L	Lacrimation	5 yr.	8 0	Limitation Abduction	Firm nodular subcutaneous lacrimal gland area	1. Biopsy 2. Exenteration	Tumor extensive, involved ocular muscle. Sharp upper orbital margin. No bone erosion		Well
M. deM.	50	F	L	Exophthalmos Blurred Vision	3 yr.		Lid swelling	Firm demarcated mass above lateral canthal ligament	1. Excision (Kronlein)	Walnut size, irregular mass		Well
S. S.	63	M	R	Lacrimation Exophthalmos	4 yr.	15 0	Optic atrophy Macular cyst	Firm smooth mass	1. Biopsy 2. Excision (Kronlein)	Mass excised Blunt dissection		Well
P. K.	32	M	R	Mass (recurred 5 yr. after excision)	15 yr.	None		Superficial nodular mass	1. Excision thru lid (elsewhere) 2. Excision thru lid	Tumor dissected free Blunt and sharp dissection. Probably extended posteriorly	This admission is recurrence	Well
C. S.	22	F	L	Exophthalmos	3 yr.	4 0	Eye depressed Limitation abduction	Firm mass	1. Excision (elsewhere) 2. Exenteration	Mass in region of lacrimal gland		Well

TABLE I—*Continued*
CLINICAL HISTORIES OF PATIENTS TREATED FOR LACRIMAL GLAND TUMORS
AT THE INSTITUTE OF OPHTHALMOLOGY

PATIENT	AGE AT ONSET	SEX	LATERALITY	PRESENTING SYMPTOM	DURATION	EXOPHTHALMOS mm.	OTHER SYMPTOMS	PALPABLE MASS	SURGERY	OPERATIVE FINDINGS	RECURRENCE	CURRENT STATUS
CARCINOMA, ADENOID CYSTIC TYPE												
J. R.	19	F	R	Pain Mass	2 yr.	6.0	Globe frozen Constant pain	Firm masses in lids	1. Excision 2. Biopsy 3. Exenteration		Masses in skin of lid 2 yrs. after exenteration recurrence with secretion fistula to frontal sinus. Pain	Died of disease (cerebral extension) 9 yr. after initial surgery
H. E.	40	F	L	Pain Mass	1 yr.	2.0		Firm nodular mass adherent to bony wall	1. Excision thru lid 2. Biopsy 3. Exenteration 4. Craniectomy	Large mass extended to apex below globe. Tumor invaded lateral wall. Tumor in bone of orbit, sinus, face. Dura initfirated	severe, involving sinus, orbit, face, skull	Died of disease 3 yr. after initial surgery
P. N.	40	M	R	Exophthalmos Pain	1 yr.	9.0	Limitation upward gaze. Papilledema	Masses beneath orbital rim	1. Craniectomy for suspected meningioma 2. Excision (thru lid) 3. Exenteration; 4. Excision of recurrence; 5. Biopsy	Negative Mass	Thickening along orbital rim; nodule in orbit; nodule at apex, in chest, and cervical node	Died of disease (pulmonary metastasis) 6 yr. after initial surgery
S. S.	31	F	R	Mass	2 mo.	4.0	Limitation lateral gaze	Hard, nodular extending above lateral canthus	1. Biopsy; 2. Excision (Kronlein); 3. Biopsy; 4. Biopsy (pre-auricular node); 5. Exenteration	Tumor extended to bone Tumor Tumor	Local and preauricular node	Died of disease 1 yr. after initial surgery
N. S.	40	F	L	Mass Exophthalmos		7.0	Pain. Floor displaced forward and down	Firm fixed mass	1. Excision 2. Excision 3. Exenteration 4. Craniectomy 5. Frontal ostectomy	Reached apex. Bone roughened. Masses behind globe extended to dura	Multiple recurrence	Died of disease 9 yr. after initial surgery
J. T.	51	M	R	Diplopia Pain	4 mo.	0		Mass near lacrimal gland	1. Biopsy 2. Exenteration 3. Section of trigeminus	Stony, hard mass filled upper orbit	Cranial extension	Died of disease 2 yr after initial surgery

TABLE I — *Continued*
CLINICAL HISTORIES OF PATIENTS TREATED FOR LACRIMAL GLAND TUMORS
AT THE INSTITUTE OF OPHTHALMOLOGY

PATIENT	AGE AT ONSET	SEX	LATERALITY	PRESENTING SYMPTOM	DURATION	EXOPHTHALMOS mm.	OTHER SYMPTOMS	PALPABLE MASS	SURGERY	OPERATIVE FINDINGS	RECURRENCE	CURRENT STATUS
M. G.	25	F	R	Exophthalmos Pain	5 yr. 5 yr.				1. Excision (transfrontal orbitotomy) 2. Excision thru lid 3. Excision (transfrontal orbitotomy)		Following each operation	Recurrent disease at craniectomy site
B. O.	65	F	R	Exophthalmos	4 mo.			Mass in upper orbit attached to bone	1. Biopsy 2. Excision	Large mass		Died of disease 5 yr. after initial surgery
V. D.	40	F	R	Exophthalmos Pain Mass (in socket)	2 yr. 1 yr. 4 mo.			Recurrent nodule	1. Excision 2. Exenteration 3. Excision and ostectomy		Twice with bone erosion	Recurrent disease in bone
CARCINOMA, MISCELLANEOUS												
A. F.	65	M	L	Exophthalmos	5 yr.	6.0		Firm, nodular. Some exostoses	1. Exenteration	Roof exposed Dura exposed	Metastases to spine	Died of disease 6 mo. after initial surgery
J. A.	50	M	L	Exophthalmos	8 yr.	4.0	Ptosis and lid swelling	Firm, smooth mass adherent to bone	1. Excision 2. Exenteration		Tumor continued to to grow	Died of disease 4 yr. after initial surgery
P. S.	54	M	L	Exophthalmos Mass	2 yr.	5.0	Ptosis and lid swelling	Firm, nodular mass attached to orbit and mass in lower lid	1. Excision 2. Exenteration	Tumor adherent to periosteum temporally	Tumor recurred with increase in lid swelling; metastatic neck node	Died of disease 2.5 yr. after initial surgery
J. C.	58	M	L	Mass	1 yr.				1. Exenteration 2. Biopsy	Tumor extended into antrum, ethmoids and orbital roof	1 yr. after exenteration	Died of disease 3 yr. after initial surgery
D. D.	76	M	L	Mass	½ yr.	0	Ptosis. Limitation in abduction. Pulmonary metastasis	Firm, nodular mass	1. Biopsy	Firm mass above, gritty and avascular		Died of disease (pulmonary metastasis) 6 mo. after initial surgery

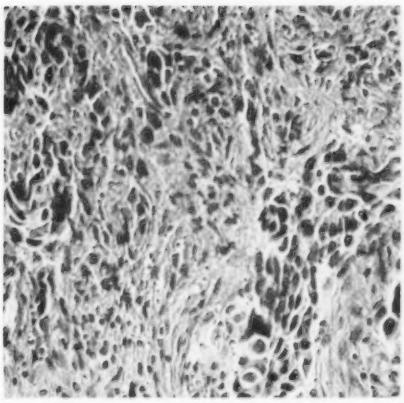

FIG. 21—Epidermoid carcinoma.

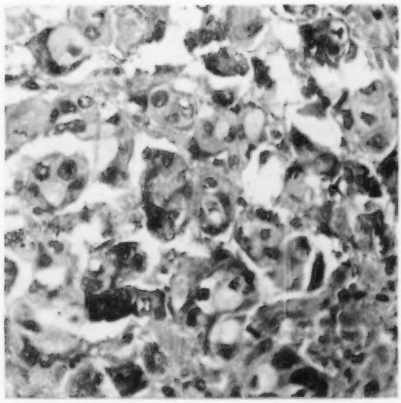

FIG. 22—Undifferentiated carcinoma.

Malignant mixed tumor is characterized by foci of marked epithelial activity (fig. 23, area A) including anaplasia and mitotic figures in an otherwise benign mixed tumor (fig. 23, area B). Multiple sections may be necessary to demonstrate these areas.

CLINICAL DATA

What is the significance of these histologic facts and how do they affect the course of the disease?

The clinical diagnosis of lacrimal gland tumor depends upon an awareness of the frequency of this type

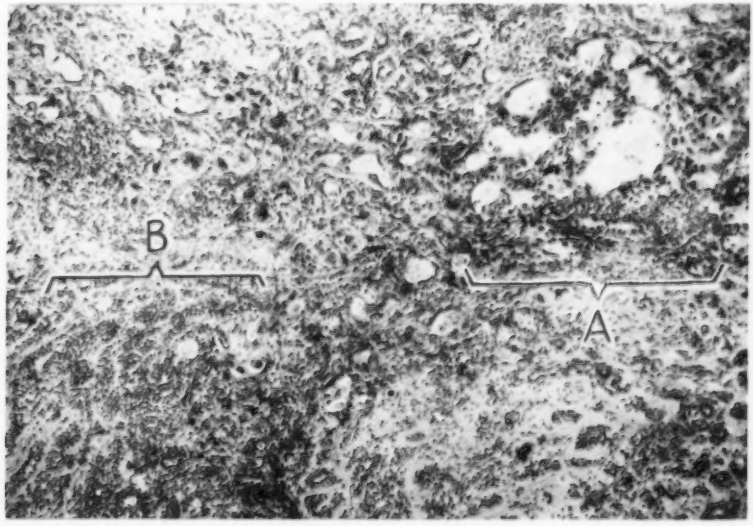

FIG. 23—Malignant mixed tumor.

A B

FIG. 24—Adenoid cystic carcinoma metastatic to lung: A, 1948; B, 1950.

FIG. 25—Patient with benign mixed tumor, recurrent. Photograph 20 years after initial operation.

FIG. 26—Recurrent epidermoid carcinoma.

among orbital tumors, particularly when palpable mass or exophthalmos with displacement of the globe towards the nose and downwards indicates a mass in the area of the lacrimal gland. Of interest are the clinical features outlined in table I. The older age of patients with carcinoma other than the adenoid cystic type, the frequency of tearing in the benign mixed tumor, and the prominence of pain in the adenoid cystic carcinoma are noted. Evidence of infiltrative growth, history of relatively rapid progression, roentgenographic bone changes (Jones and Pfeiffer[10]), or evidence of metastases (fig. 24) indicates malignant tumor; in early stages clinical distinction between benign and malignant variants is impossible.

The table indicates the course of the disease and shows that of 8 patients with benign mixed tumors who were treated at this hospital (3 of 11 specimens were submitted from outside sources and follow-up information was not available) all are living and well this year. Seven patients have survived

FIG. 27—Adenocarcinoma.

FIG. 28—Undifferentiated carcinoma.

an average of seven years, 2 of them for sixteen and twenty-one years, respectively, without recurrence. Only in one instance was there significant recurrence. This was noted five years after the initial operation, and although it was untreated for fifteen years, it remained localized to the area of the lacrimal gland (fig. 25). Specimens of more extensive recurrence of benign tumor have come to my attention, but none of the cases under observation by members of the hospital staff behaved in this manner. The operative note in at least one such patient indicated that a cystic tumor had been opened at the initial operation and the operative area became seeded with tumor. Incomplete excision and spreading of tumor at the time of operation account for the few recurrences of benign mixed tumor.

Contrasting with this relatively innocent behavior of the benign mixed tumor is the natural history of the carcinoma (figs. 26, 27, 28). Six patients with adenoid cystic carcinoma died an average of five years after the initial operation, and 2 were living with the disease eight and three years later, respectively. Although the average life span after initial operation was five years, this was usually a period of multiple recurrence, metastasis and frequent operation. Among the carcinomas other than the adenoid cystic type, 5 patients died an average of two and a half years postoperatively.

Analysis of the types of treatment (table I) shows that the benign mixed tumors were treated by local excision through lid or Krönlein approach, and in some instances by exenteration. Only in one patient was significant recurrence noted. In cases of adenoid cystic carcinoma, on the other hand, final exenteration after more conservative methods had failed did not halt the progress of the disease in any of 8 patients. Excision of bones of face and skull in four patients was no more successful. A similar situation is noted in the series of carcinoma, miscellaneous, in which four exenterations were not successful. A fifth patient showed chest metastases at the time of biopsy, was not submitted to further surgery, and died shortly thereafter.

These data demonstrate that several types of tumors of the lacrimal gland can be distinguished morphologically and that their behavior depends upon the pathologic picture. Patients with benign mixed tumor of the lacrimal gland have been cured by conservative local excision, but no patient with carcinoma of the lacrimal gland in our series has been saved by any of the methods which we have used. Dr. Edith Parkhill, in a personal communication, states that tumors of the lacrimal gland treated at the Mayo Clinic have behaved in a similar manner.

CONCLUSION

In view of this behavior the following management of patients with a mass in the area of the lacrimal gland is suggested. Such patients will have either a palpable mass in the lid or in the orbit in the upper temporal quadrant or exophthalmos with displacement of the globe down and in. Local roentgenographic studies are made.

General medical examination may reveal evidence of metastatic tumor to or from lacrimal gland, primary intracranial tumor (meningioma), generalized tumor (lymphoma), or inflammatory disease (sarcoid). If these are absent, then primary lacrimal gland tumor is a more likely diagnosis.

1. Incision to approach the mass is made through the upper lid in the outer third. If such exposure demonstrates a well-demarcated mass localized to the area which is accessible by this surgical attack, the mass is completely excised.

2. If the mass appears to be demarcated and encapsulated but is larger than can be removed through the lid approach, or if visualization is inadequate, the incision is extended laterally so that the orbit can be approached by the Krönlein technic and an attempt is made to excise this well-defined mass entirely.

3. If at the initial incision through the lid or through the extended incision, the mass appears to be infiltrative, then a segment is removed for biopsy and nothing further is done at this point.

Regardless of what surgical technic has been used, pathologic examination will reveal one of the following: (1) benign mixed tumor completely excised; (2) malignant lacrimal gland tumor which is invasive; (3) inflammatory disease including sarcoid and nonspecific granuloma; (4) local evidence of essentially general disease or lymphoma; or (5) neoplasm or inflammation unrelated to the lacrimal gland.

Only the first two groups are under consideration. In the case of the first group no further treatment is indicated. If previous incomplete excision has allowed the tumor to spread, local excision may no longer be surgically feasible, and exenteration may be required.

In the case of the second, in which malignant lacrimal gland tumor is found, immediate further operation must be carried out. With the help of the roentgenologist in determining the extent of bone invasion and with the assistance of the neurosurgeon and the rhinologic surgeon, an attempt is made to excise all involved bone. This may include entrance into the cranial cavity and the sinuses. Exenteration is essential and no attempt is made to preserve the lids.

In our experience with the procrastination which characterizes destructive and disfiguring surgery necessary in the treatment of malignant tumors, patients with this disease have never been saved. The only hope is earlier and more aggressive surgery. Radiation is limited to the treatment of the adenoid cystic carcinoma which, although radiosensitive, has not proved radio-curable.

The histologic pattern of lacrimal gland tumors correlates with their be-

havior. Judgment as to treatment must consider the clinical and roentgenologic examination with emphasis upon the pathologic picture.

I wish to express my indebtedness to the members of the Staff of the Institute of Ophthalmology for much of these data, and particularly to Dr. Algernon B. Reese for his guidance.

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DISCUSSION

VINCENT JOHNSON, M.D., Detroit, Mich., (by invitation): Lacrimal tumors are rarely encountered by the average radiologist. Therefore, it has been a privilege to study the exhibit of this unusual collection of cases and to hear the clinical, pathologic and radiologic features of these lesions described by the essayists.

Certainly the recognition of these tumors cannot be accomplished by roentgenographic examination alone. It is true that carefully conducted roentgenographic examination will permit the recognition of bone erosion, destruction or hyperostosis, and in these cases the location of orbital involvement may point to, or suggest the existence of, a lacrimal tumor. However, the most accurate approach to diagnosis demands careful evaluation of the roentgenologic signs in the light of clinical manifestations. Because this is true not only for diagnosis of these tumors but for most other conditions that may involve the soft tissues in the orbit or bones in this area, close cooperation between the ophthalmologist and the radiologist is urged.

The radiologic examination must be conducted with maximum care and precision.

Intracranial tumors, such as meningiomas, may invade the orbit and can produce localized hyperostosis or bone destruction. Even though such lesions do not usually involve the exact area that is altered by lacrimal tumors, some confusion may be introduced by the roentgenogram when bone involvement by the lacrimal tumor is extensive. Other intraorbital soft-tissue lesions can involve the orbital bone walls and might conceivably be in a position to cause bone changes similar to those illustrated so well in the roentgenograms of these cases. Inflammatory disease, particularly osteomyelitis complicating a frontal sinusitis, may invade the supraorbital ridge. Examination of normal skull roentgenograms will reveal definite irregularity in the density of bone of the orbital roof and the floor of the frontal fossa caused by convolutional markings from intracranial structures. If one is too zealous in interpretation, these normal variations of bone density may be erroneously described as areas of erosion.

After considering all possibilities for the production of misleading roentgenographic signs, it is evident that the authors have made a real contribution in calling our attention to their detailed observations of bone changes produced by lacrimal tumors that may have been previously unrecognized.

THEODORE E. SANDERS, M.D., St. Louis, Mo.: The papers of Dr. Forrest and of Drs. Jones and Pfeiffer are very definite contributions to our knowledge of lacrimal gland tumors. They clarify our idea of the nature and pathology of this group of tumors. They should also prove to be a definite help not only in diagnosis but also in the management

of this rather difficult type of case. The value of these two coordinated papers is quite obvious, but I think is worthy of note.

In our experience, radiography as a rule has been rather disappointing in the amount of information and assistance given us in any type of orbital tumor. The interpretation of these films is notoriously difficult, as the changes are quite subtle and difficult to appreciate. I believe the paper of Drs. Jones and Pfeiffer will be a help to the radiologists in this problem of interpretation of bony changes of the orbit secondary to tumor.

The paper of Dr. Forrest should change our attitudes not only in mixed tumor of the lacrimal glands but also in other types of carcinoma of the gland. He has shown not only that there are distinct histologic types of tumor but that they affect the clinical course and ultimate result. I agree with him entirely that these tumors are not one and the same lesion. However, I believe that they are probably all adenocarcinomas with varying degrees of malignancy and differentiation of tissue. I might emphasize here that I have not been as fortunate in my experience as Dr. Forrest, as in our series of cases we have had 100 per cent recurrence. One patient had a recurrence twelve years after the original removal, and one year after the recurrence had to have resection of the frontal bone with intracranial extension.

I believe that this difference in recurrence rate in my original series may be due to the fact that it was reported some years ago, and with this better idea of the tendency for recurrence the surgeons have been doing wider and more complete excisions of the tumors originally. In a series under study at present I believe our recurrence rate will be considerably less than in our original series.

There has been a general tendency to avoid biopsy of orbital tumors. With the rather common occurrence of chronic granulomas forming a pseudotumor and with Dr. Forrest's evidence that in this particular group the ultimate prognosis is quite dependent on the histologic type, I believe that this attitude of no biopsy should be scrutinized and properly evaluated. However, at the present time I agree with him that the best treatment is an original wide, local removal with a radical exenteration if the tumor should prove to be of a more malignant type.

The report of Dr. Jones and Dr. Pfeiffer also suggests that mere exenteration of the orbit is not sufficient and resection of the bony wall of the orbit should be considered in many cases. This fact is emphasized in the discussion of my original paper some fourteen years ago.

I believe that this report also emphasized the need of better treatment of these cases. I think that this also fits in with the idea of modern treatment of cancer anywhere in the body; that is, prompt and wide excision. The ophthalmologist is often too conservative in the removal of tissue around the eye.

DR. PFEIFFER: Drs. Forrest and Jones bring hope in cases of tumors of the lacrimal gland; Dr. Forrest in showing that not all these growths are malignant as has been thought, for indeed nearly half are benign; and Dr. Jones in demonstrating that most tumors affect bone in some manner and can be recognized and ofttimes distinguished, one type from another, in roentgenographic films. In addition, the information provided by the films should enable the surgeon to be more adequate in his management of the malignant types.

The importance of the roentgenogram in diagnosis in ophthalmology is well exemplified by this series of cases. We are able to diagnose and differentiate with fair reliability many of the various tumors which occur in the orbit and explain many cases of exophthalmos due to causes other than tumor. In order that the surgeon might profit most, it is eminently desirable that he possess some skill in the reading of films of the orbit. This requires an understanding of bone, its diseases, and its response to the impingement of neighboring structures. It is gratifying that the American Board of Ophthalmology is taking an interest in the teaching of roentgenology to residents.

I want to thank Dr. Sanders and Dr. Johnson for their discussions. In the interest of accuracy it should be stated that 4 of Dr. Sanders' cases were taken from our files and that 1 of the patients which he reported is still living and well after twenty-one years of observation. Dr. Sanders' paper appeared fourteen years ago and because of it our treatment and management of patients improved and the patients have benefited.

DIAGNOSIS AND TREATMENT OF TOXOPLASMIC UVEITIS

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THE recent demonstration of Toxoplasma as a cause of adult granulomatous uveitis[5] has substantiated earlier work contributing to the hypothesis that Toxoplasma is the cause of a significant number of cases of chorioretinitis. Woods and co-workers[11] estimate that possibly 25 per cent of such cases are toxoplasmic in origin. The serological data obtained in these studies indicate that a definitive etiologic diagnosis on the basis of a single Toxoplasma dye test is hardly possible. The prevalence of dye test positives in the general population[3] and the finding that dye test titers may be low in the presence of ocular disease make the diagnosis by this means difficult in the individual case. The dye test adds another datum for the ophthalmologist to consider in his evaluation of the patient.[4,5]

Patients referred to the Ophthalmology Branch of the National Institute of Neurological Diseases and Blindness with a diagnosis of uveitis were investigated by extensive clinical and roentgenographic examinations and laboratory techniques. In addition to the usual survey tests for granuloma, the Toxoplasma dye,[8] complement fixation* and intradermal tests were carried out routinely.

Presumptive etiologic diagnoses of toxoplasmic uveitis have been arrived at by the correlation of all available significant data. Among these criteria are the clinical appearance, the absence of more convincing evidence of other etiologic possibilities, the presence of skin sensitivity to toxoplasmin and of anti-Toxoplasma antibodies revealed by the dye test. In regard to the latter criterion, an attempt has been made, by repeated tests on the same individuals, to see if fluctuations in the titer of serum antibodies are associated with activity of lesions and if such fluctuations could be relied upon to strengthen a presumptive diagnosis. No particular dye test titers were set as standards. Rather, it was felt that regardless of titer, the presence

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*The complement fixation test was performed by the Immunology Section, Laboratory of Tropical Diseases, National Institute of Microbiology.

TABLE I

GRANULOMATOUS UVEITIS BY PRESUMED ETIOLOGY
(67 Cases)

	NO. CASES	PER-CENT-AGE	MALE	FEMALE
Toxoplasmosis (acquired)	37	55.2	16	21
Toxoplasmosis (congenital)	2	3.0		2
Tuberculosis	16	23.8	4	12
Syphilis	1	1.5		1
Brucellosis	2	3.0	1	1
Boeck's Sarcoid	2	3.0	1	1
Sympathetic Ophthalmia	2	3.0	1	1
Undetermined	5	7.5	2	3
Total	67		25	42

of positive dye tests made it possible to entertain a diagnosis of presumptive toxoplasmic uveitis if other factors in the case pointed toward that diagnosis. Where other etiologic possibilities were present in a case, all other factors were weighed before giving a presumptive diagnosis.

Since many of the referred patients had been given unsuccessful courses of treatment before referral (see table III), it appears obvious that the group is a selected one with a high percentage of problem cases. Therefore, it seemed reasonable to expect that a high percentage of the cases would be due to etiological factors which do not respond to the more conventional types of therapy. As an example, the failure of a patient to respond to a previous course of anti-tuberculosis therapy was considered as evidence pointing toward a different causative factor for the eye disease.

Since the initiation of the study late in 1953 a total of 93 patients were referred with a tentative diagnosis of uveitis. Many of these came from the Washington, D. C., area and were followed as outpatients through diagnostic work-up and treatment. Those from a distance, and any other cases requiring it, were hospitalized at the Clinical Center.

Of the 93 referred cases, 14 were screened out as being noninflammatory uveal conditions. Twelve more were diagnosed as nongranulomatous and were therefore not included in this report. The remaining 67 cases were classified on the basis of their medical surveys, as shown in table I.

Thirty-seven of the cases, or 55 per cent, were given a presumptive diagnosis of acquired toxoplasmic uveitis, while 2 cases were presumed to have congenital toxoplasmic uveitis with exacerbations. This high percentage may have as its explanation the preponderance of patients with long-standing uveal disease which had had unsuccessful therapy by more conventional methods. Table II shows the previous diagnoses, where obtained, on the 39 cases considered to be toxoplasmic in the present study. It is noted that the duration of eye disease in these patients averaged 8.7 years, ranging from 3 days to 50 years.

Tuberculosis was the second most common presumptive diagnosis in this series. Only 9 cases previously diagnosed as tuberculous in origin were reclassified as due to Toxoplasma infection. Only one of these had no history of treatment for tuberculosis, while some of the remaining 8 had received both desensitization procedures and chemotherapy, and others foreign protein therapy or topical cortisone. The reason for the changes in diagnosis rested mainly on the failure of the anti-tuberculosis treatment, the presence of

TABLE II

PRESUMPTIVE TOXOPLASMIC UVEITIS: PREVIOUS DIAGNOSES WITH DURATION OF DISEASE (39 CASES)

DIAGNOSIS PRIOR TO REFERRAL	NO. CASES	AVERAGE TIME SINCE ONSET IN YEARS	RANGE OF CASE DURATION
Tuberculosis	9	11.9	3 yrs. to 39 yrs.
Foci of Infection	3	4.7	3 yrs. to 7 yrs.
Toxoplasmosis	2	9.5	7 yrs. to 12 yrs.
Syphilis	1	50.0	
Brucellosis	1	11.0	
Other*	2	0.8	2 wks. to 1.5 yrs.
Diagnosis Not Stated	17	8.8	3.5 wks. to 38 yrs.
No previous diagnosis	4	1.4	3 days to 3 yrs.
TOTALS	39	8.7	3 days to 50 yrs.

* 1 case each of macular degeneration and central angiospastic chorioretinopathy.

TABLE III

PRESUMPTIVE TOXOPLASMIC UVEITIS: PREVIOUS DIAGNOSES AND TREATMENT (39 Cases)

DIAGNOSIS PRIOR TO REFERRAL	NO. CASES	PREVIOUS TREATMENT								
		CYCLOPLEGICS	TOPICAL CORTISONE	CHEMOTHERAPY	SURGICAL FOR FOCI	FOREIGN PROTEIN	SYSTEMIC CORTICOSTEROIDS	TUBERCULIN DESENSITIZATION	TUBERCULOSIS CHEMOTHERAPY	PREVIOUSLY UNTREATED
Tuberculosis	9	3	3		1	3		8	3	1
Foci of Infection	3	1	2	1	3	1				
Toxoplasmosis	2									2
Syphilis	1	1		1						
Brucellosis	1	1		1						
Other*	2			1		1	1			1
Diagnosis Not Stated	17	9	8	5	1	3	5			2
No Previous Diagnosis	4	2	2	1			1			2
TOTAL	39	17	15	10	5	8	7	8	3	8

* 1 case each of macular degeneration and central angiospastic chorioretinopathy.

TABLE IV

PATIENTS WITH GRANULOMATOUS UVEITIS: COMPARISON OF SOME TOXOPLASMOSIS AND TUBERCULOSIS INDICATIONS (67 Cases)

DYE TEST TITER	NO. CASES	TOXOPLASMA SKIN TEST +	TOXOPLASMA SKIN TEST −	SCARS OR CALCIFICATIONS IN CHEST X-RAY	TUBERCULIN SKIN TEST P.P.D. 1	TUBERCULIN SKIN TEST P.P.D. 2	TUBERCULIN SKIN TEST NEGATIVE
1:512	6	6		3	2	2	2
1:64 and below 1:512	19	17	2	7	4	7	8
Positive below 1:64	26	17	9	7	6	9	11
Total Positive Dye Tests	51	40	11	17	12	18	21
Negative Dye Test	16		16	8	8	4	4

Admission titers showed 4 positive complement fixation tests in group of 1:512 or higher and 1 positive in the 1:64-1:512 group.

significant anti-Toxoplasma antibody titers and the absence of stronger evidence of other etiologic possibilities.

Of the 37 adult cases, 21 were referred without statement of etiologic diagnosis. Of this group all but 4 had received treatment of some conventional type. Cycloplegics and topical cortisone were the most common agents employed. Thus of the entire series, 21 were typical diagnostic problems, and in the absence of strong indications of other etiologic possibilities the positive dye test for toxoplasmosis was the most significant factor to consider.

Table IV shows a comparison of indications suggesting a tuberculous etiology with those suggesting toxoplasmosis. The number of cases is obviously too small to merit statistical analysis. On inspection, the greatest difference found between the two groups is in response to P.P.D. 1. While only 12, or 23.5 per cent, of cases with positive dye tests reacted to this antigen, 50 per cent of cases with negative dye tests so reacted. Only 25 per cent of patients with negative Toxoplasma tests failed to react to P.P.D. 1 or P.P.D. 2, while 41 per cent of the cases with positive dye tests were negative on tuberculin testing. Although the number of cases is small, it appears that the group with positive dye tests has less suggestion of tuberculosis than the negative dye test group.

Of the 37 cases given a presumptive diagnosis of acquired ocular toxoplasmosis, 11 had x-ray evidence of pulmonary scarring or calcification, 9 had positive intradermal tests with P.P.D. 1, and 12 reacted positively to P.P.D. 2. Four of these had had previous anti-tuberculosis therapy.

The toxoplasmin intradermal test was negative in all cases with negative dye tests and positive in approximately 80 per cent of cases with positive dye tests. The bulk of negative skin test reactions was found in the patients with low dye test titers.

Distribution of the cases by sex showed no significant differences between the groups of cases considered to

TABLE V

ALL GRANULOMATOHS UVEITIS PATIENTS: LOCATION OF LESION IN RELATION TO PRESUMPTIVE DIAGNOSIS (67 Cases)

PRESUMPTIVE DIAGNOSIS	NO. CASES	AVERAGE AGE	ANTERIOR UVEITIS ONLY	POSTERIOR UVEITIS ONLY	BOTH ANTERIOR & POSTERIOR UVEITIS	UNILATERAL UVEITIS	BILATERAL UVEITIS*
Toxoplasmic	39	33.6	5	25	9	18	21
Non-Toxoplasmic (Dye Test Positive)	12	41.2	1	6	5	6	6
Non-Toxoplasmic (Dye Test Negative)	16	45.0	4	9	3	5	11
TOTAL	67	37.7	10	40	17	29	38

Age range of positive dye tests: 11-77, negative dye tests: 21-65.
*Includes combinations of anterior and posterior uveitis.

be toxoplasmic and those nontoxoplasmic in origin. Distribution by age (table V) shows a somewhat lower average age in the cases presumed to be of toxoplasmic etiology than in the groups, either positive or negative in the dye test, which are considered to have other causes for their ocular disease. This is in contrast to the usual findings in surveys of the general population in which there is a rise in dye test positives with increasing age.

Tables V and VI show that in 5 of 39 (12.8 per cent) of the cases in the presumed toxoplasmic group, uveitis was present only in the anterior segment of the eye, in comparison with this localization in 4 of 16 (25 per cent) of the negative dye test group, and 17.8 per cent of the total cases considered nontoxoplasmic. Cases with posterior uveitis were found at approximately the same rate in both groups. Bilateral involvement was present in 61 per cent of

TABLE VI

COMPARISON OF CASES WITH CENTRAL AND PERIPHERAL UVEAL INVOLVEMENT BY DYE TEST RESULTS: POSTERIOR GRANULOMATOUS UVEITIS (57 Cases)

TOXOPLASMA DYE TEST		NO. CASES	CENTRAL UVEITIS ONLY	PERIPHERAL UVEITIS ONLY	BOTH CENTRAL AND PERIPHERAL UVEITIS	BILATERAL POSTERIOR UVEITIS
Positive	Presumed Toxoplasmic	34	9	14	11	12
	Presumed other causes	11	4	6	1	4
	Total	45	13	20	12	16
Negative		12	5	4	3	7
Total		57	18	24	15	23

TABLE VII

ANALYSIS OF DYE TEST RESPONSES OF PATIENTS TREATED FOR PRESUMPTIVE TOXOPLASMIC UVEITIS (29 Cases)

ADMISSION TITER	NO. CASES	DECREASE IN TITER*	INCREASE IN TITER	NO SIGNIFICANT CHANGE IN TITER	PROBABLY INSUFFICIENT TIME
1:512 or higher	4	1		2	1
1:64 and below 1:512	15	4	1	8	2
Positive below 1:64	10	1		7	2
Totals	29	6*	1	17	5

*During observation period only 6 had drop of 2 or more tubes dilution in a fashion suggesting that this might be a response to therapy.

the nontoxoplasmic group, and 58 per cent of those with negative dye tests, as compared to only 35.5 per cent of the presumed toxoplasmic group. There were proportionately fewer cases of central uveitis and conversely more with peripheral lesions in the presumed toxoplasmic group than in the other. As more data are accumulated, such comparisons may lead to significant conclusions, but at the present time they afford little aid to the clinical diagnosis of toxoplasmic chorioretinitis.

On the basis of clinical evidence, cases with a presumptive diagnosis of toxoplasmosis were divided into two groups, active and quiescent. Twenty-nine of the 39 cases were considered to be active or became so after being observed over a period of months with repeated dye tests. These were placed on dosages of pyrimethamine (2,4-diamino-5-chlorophenyl-6-ethyl pyrimidine, manufactured under the trade name of "Daraprim") and "sulfa" drugs, chiefly sulfadiazine. These drugs have been reported to have anti-toxoplasmic activity in mice and other laboratory animals by Eyles and co-workers.[1,2] Early in the study, cases were treated on a regimen of pyrimethamine (25 milligrams three times daily) and with sulfa drugs (0.5 gram to 2.0 grams daily) for ten days. Amounts given required adjustment to individual tolerances, since it was found quickly that many patients did not easily accept the higher dosages. The length of treatment was also revised as experience was gained by observing effects. The chief change was to lengthen the course, using small dosages, in the hope of preventing reactivation of the lesions which might result from the rupture of pseudocysts after treatment had been discontinued. In some cases the dosage of pyrimethamine was increased to 100 mg. daily and continued for a longer period of time, up to 30 days. The dosage was then reduced in most cases to 25 mg. of pyrimethamine daily while the sulfa drug was discontinued.

While on treatment patients were seen at approximately weekly intervals and followed by clinical, serologic, hematologic and other laboratory examinations for progress of the treatment and possible deleterious effects. Dye tests were done serially on patients' serum before, during, and after termination of treatment.

Table VII presents an analysis of the dye test responses during treatment, and for some cases for a time following treatment. In 23 of the 29 cases there was no significant change in dye test

TABLE VIII

ANALYSIS OF VARIOUS CLINICAL RESPONSES: PATIENTS TREATED FOR PRESUMPTIVE TOXOPLASMIC UVEITIS: (29 CASES)

CLINICAL RESPONSE	TOXOPLASMA THE ONLY APPARENT ETIOLOGIC AGENT (9 Cases)		OTHER ETIOLOGIC POSSIBILITIES APPARENT (20 Cases)		TOTAL	
	NO.	PERCENTAGE	NO.	PERCENTAGE	NO.	PERCENTAGE
Apparent clearing of focal inflammatory lesion if demonstrable	4	44	9	45	13	44.8
Clearing of vitreous opacities to significant degree	4	44	13	65	17	58.6
Increase in visual acuity	8	89	9	45	17	58.6
Subsidence of secondary glaucoma if due to inflammation of anterior segment			1	5	1	3.4
Cessation of K. P. formation, and clearing of aqueous			3*	15	3	10.3
Photopsia relieved			1	5	1	3.4
Total patients showing a clinical response	8	89	17	85	25	86.2
Not treated long enough for response	1	11	2	10	3	10.3
No response to treatment			1	5	1	3.4

Eight cases or 27.6 per cent showed clear-cut response within seven days of institution of therapy.
*Two patients have complicated cataract and subjective response is therefore difficult to elicit.

titers to the extent of one or more tube dilutions. In 5 cases it seems probable that insufficient time had elapsed since beginning treatment to anticipate change. Six of the cases under therapy showed a drop of two or more tube dilutions, the fluctuations in dye test titers being noted most often in the 1:64 to 1:512 group. It cannot be proven, however, that this was a response to therapy. One case showed a slight rise in titer under therapy. No serious attempt will be made to explain toxoplasma dye test results until more time has elapsed and more cases have been observed over a longer period of time.

Clinical evaluation of cases was based on whatever objective and subjective findings could be elicited and the type of findings varied with the localization of the lesions and their visibility. Since the lesions were found to be primarily focal and most commonly involved the choroid and retina, poor visibility of the fundus through clouded vitreous was the chief limiting factor in objective evaluation. Keratic precipitates, posterior synechiae, deposits on the lens capsule, and complicated cataracts were occasional impediments to visibility of lesions under treatment.

The principal criteria used for weekly clinical evaluation of progress of treatment are those shown in table VIII. Serial visual fields were recorded at frequent intervals.

As shown by table VIII, 25 of the 29 cases treated or undergoing treatment have shown some satisfactory clinical evidences of improvement. These became apparent at varying times during therapy, depending on the circumstances of the case. In all cases, however, they point toward abatement of the lesion. The two juvenile cases with presumed exacerbations of congenital toxoplasmosis gave essentially the same type of favorable response. In some cases response in visual acuity was dramatic, as in the cases where a small amount of vitreous haze over the macula might clear enough in a week to change vision by two or three lines on the chart. Eight cases, or 27.6 per cent, showed an improvement within seven days of institution of therapy. In 5 of the 8 cases, improvement was both objective and by increase of visual acuity. Cases in which vitreous opacities reduced vision to finger counting or below seldom showed significant change in vision for a month or more. In such cases other evidences of improvement are also slow in becoming apparent. It is noted that the percentage of cases with apparent clearing of focal inflammatory lesions was the same in the group where toxoplasmosis was the only apparent etiologic possibility as in the group with other known possibilities. This clearing of approximately 45 per cent of the lesions becomes more significant when it is considered that 3 more patients, or 10 per cent, had been on treatment too brief a period to expect significant response, and that several could not be judged on this basis because of poor visibility of the lesion.

Seventeen of the cases, or 59 per cent, showed significant clearing of vitreous opacities in the time observed, and usually by the end of the course of therapy. Fifty-nine per cent of the cases showed increase in visual acuity under treatment or shortly following it. Not all cases could be expected to show evidence of clearing during the period of observation.

One patient responded from very annoying photopsia in an eye with extensive chorioretinal scarring and loss of central and pericentral vision. An active lesion could be seen in the area implicated by the photopsia. Subsidence of the lesion as noted ophthalmoscopically was accompanied by simultaneous cessation of photopsia.

Only one patient failed to show clinical response after a course of therapy. In her case the dye test decreased from 1:16 to negative. The patient had previously had a course of tuberculin desensitization without apparent benefit. She is now receiving anti-tuberculosis chemotherapy.

Side effects of therapy with pyrimethamine and sulfadiazine are troublesome both subjectively and objectively. There was fairly marked variation in tolerance of the drugs from both standpoints. Age or sex variations are not as significant as individual factors, but there is a suggestion that youthful patients show greater tolerance than patients in middle age or older. Table IX shows analysis of observed side effects.

The commonest complaint was that of intermittent nausea with occasional emesis, which was present to some extent in 21 of the 29 cases. When severe, it was usually relieved in one to three days by reduction of the dosage of drugs. In this manifestation the drugs appear to have an additive effect. Since the pyrimethamine was thought to be the more effective drug therapeutically, the sulfadiazine was more consistently reduced in dosage. Most adult patients

TABLE IX

ANALYSIS OF OBSERVED SIDE EFFECTS OF THERAPY

PATIENTS TREATED FOR PRESUMPTIVE TOXOPLASMIC UVEITIS

(29 Cases)

MANIFESTATION	NO. CASES	PERCENTAGE
Intermittent nausea	21	72
Anorexia	14	48
Weight loss	11	38
Depression of erythrocytes	7	24
Depression of platelets	5	17
Depression of leukocytes	4	14
Disturbance of taste sense	4*	14
Petechial phenomena	3	10
Allergic manifestations	3	10
Disturbance of skin pigment	1	3
Complaint of bleeding	1**	3

* 3 had loss of pleasure in coffee or cigarettes; 1 complained of constant metallic taste.
1 had complained of constant metallic taste.

** This case complained of earlier onset and increase of menstrual bleeding.

tolerated 50 mg. of Daraprim daily with 0.5 gram of sulfadiazine, and a few could tolerate 100 mg. of Daraprim and 1.5 grams of sulfadiazine daily without nausea. No attempt was made to use drugs other than alkalizers to reduce nausea, because it was desired to observe side effects without masking.

Anorexia affected 48 per cent of the patients. Dosage was reduced in such cases to a level at which food intake was not severely reduced. No changes in diet were recommended, but in all cases on treatment with these drugs patients were denied vitamin concentrates. It was found that tolerance was usually better when the drugs were taken with meals. Dosage was often equalized for two or three meals daily, but in some cases was given four times daily.

Weight loss occurred in 11 of the cases with anorexia, or 38 per cent of the group treated. The largest loss was 20 pounds, but losses were usually in the range of 5 to 10 pounds. On cessation of therapy or reduction to a level tolerated without anorexia, weight was regained with variable rapidity in these cases.

Objective evidences of disturbances in the hematopoietic system were revealed by depression of any or all the formed elements of the blood in certain patients given heavy therapy for three weeks or longer. The lowest levels reached were chiefly in patients in whom these findings already tended to be low. A case with 10.7 grams hemoglobin level fell to 8.2 grams during treatment. The lowest white cell count

recorded was 2900 and the lowest platelet count was 29,000. Only 24 per cent of the patients showed marked depression of the erythrocytes; 5, or 17 per cent, revealed depression of platelets; and 4, or 14 per cent, had a leukopenia of note. Recovery was rapid in every case when therapy was terminated or reduced to a level of 25 mg. of Daraprim daily.

Sternal bone marrow was examined on a number of patients under treatment. Changes were noted which most resembled those that can be produced by folic acid suppressors. However, there appeared to be differences suggesting some toxic response by the cellular elements.

Bleeding in any form was watched for but observed in only 3 patients in the form of petechial phenomena. Distribution was over the wrists and ankles primarily. One patient complained of earlier onset of menstruation and increased menstrual bleeding. Two patients spoke of minimal epistaxes, but admitted that they occasionally had epistaxis of this degree.

Disturbances of the taste sense were generally minimal though present in some of the cases of anorexia. However, 3 patients lost all pleasure in cigarettes and coffee because of changes in the taste. One complained of a constant metallic taste. These phenomena cleared within a few days after reduction or termination of therapy.

Three cases had pruritic skin lesions during therapy. In one there was a diffuse pruritic erythematous rash at the neckline. In two there were widely separated urticarial-like spots over various portions of the body. It was not clearly determined whether the allergic manifestations were related to pyrimethamine or the sulfadiazine. Antihistaminics were used satisfactorily for relief.

A single case had pigmentary changes in the skin of the distal phalanges of the fingers and toes. This occurred on 100 mg. of Daraprim daily for one month and cleared in about one week after reduction of Daraprim to 25 mg. daily.

DISCUSSION

Since this is a preliminary report on a series of cases which are still being followed and some of which are still undergoing treatment, it is impossible to speak with finality concerning some of the findings so far recorded. However, certain impressions have been gained which seem well-founded.

It appears probable, on the basis of recent reports, that ocular toxoplasmosis is a relatively important cause of chorioretinitis in adults. Our data lend support to this idea and indicate that Toxoplasma infection may be responsible for as large a proportion as half of the granulomatous uveitides. Our sample may be considered by some to be biased in that the cases referred to us are often found to have been unresponsive to the conventional types of therapy. However, since this is true of many cases of uveitis seen in a private or hospital practice, it is not felt that the selection of our cases has of necessity placed undue emphasis on Toxoplasma.

The possibility that fluctuations in serum antibody titers on successive dye tests might be found indicative of ocular toxoplasmosis was investigated. The results thus far have not warranted reliance on such a criterion. Similarly, it does not appear that absence of fluctuation diminishes the likelihood of the presence of toxoplasmosis. It has been necessary for us, therefore, to rely largely on the usual survey procedure in arriving at a presumptive diagnosis.

Our results with the toxoplasmin skin test indicate that it should be very useful as a diagnostic aid in clinical practice. No positives were found in the absence of positive dye tests, and only 20

per cent of patients with positive dye tests failed to react. It is suggested that the skin test lends itself more readily to widespread clinical use, but that the dye test may be needed routinely to confirm negative intradermal reactions.

Etiologic diagnosis by indirect evidence may have been somewhat easier in this group of patients than is usually the case. All except 21 had been given previous diagnoses and all but 4 of the 21 had received previous treatment. Consequently, it was possible to evaluate the patients also on the basis of earlier unsuccessful attempts at therapy. An attempt has been made to appraise the cases judiciously, and the diagnosis of toxoplasmosis has not been presumed merely on the basis of such previous failures, but with consideration of all the factors known to be involved. Thus, it is to be noted that in approximately 25 per cent of our series of cases the diagnosis of presumed ocular tuberculosis was made or sustained. Only 9 cases previously so diagnosed were reclassified as toxoplasmic. For such reasons as these, it is believed that the bulk of our sample selected for chemotherapeutic studies was justifiably considered of toxoplasmic etiology.

Difficulties in evaluation of therapy of uveitis are considerable. Chorioretinal lesions are often unstable, showing apparently spontaneous exacerbations and remissions. Therapeutic effects must therefore be appraised in relation to time following institution of therapy wherever possible. Superimposed on this difficulty are those associated with the establishment of satisfactory criteria for judging a therapeutic response. Each case required individual consideration as to what criteria were capable of fulfillment, taking into account such factors as the visibility of the fundus or of the lesions. In a number of our patients, heavy clouding of the vitreous, presence of heavy keratic precipitates, posterior synechiae or complicated cataract caused the patient's own subjective impressions of change, including visual acuity, to be among the chief criteria available for discerning response to the drugs.

Eight cases discussed above, in which visibility of the lesion was possible, showed a response to therapy within one week after institution of treatment. It seems highly unlikely that the response of 27.6 per cent of the cases can be attributed to coincidental spontaneous remission, because it is hardly to be expected that so many would have had a remission in the same time interval. Thus, it is felt that in 27.6 per cent of our treated cases a satisfactory therapeutic response was rapidly elicited. In the other treated cases it was more difficult to satisfy our criteria because of inability to visualize lesions well or for other technical reasons. However, in general, all but one responded favorably.

In management of the patients every effort was made to observe them with such frequency as to permit minimization of known dangers of the therapy.[6,7,9] Patients were encouraged to call the clinician at any hour if untoward signs or symptoms appeared. This careful watching for the occurrence of toxic reactions to pyrimethamine was instituted particularly because of the report of Schmidt and co-workers on the pharmacology of the drug.[9] These authors noted splenic and lymph node atrophy, depression of erythropoiesis, degenerative changes in the adrenal cortex, and bronzing of the skin in monkeys given 5 mg. or more per kilogram daily for nine or more days. Acute convulsive seizures occurred in animals given 10 milligrams or more per kilogram daily, but did not occur with lower dosages. A regimen of 2.5 milligrams per kilogram daily for up to 42 days caused death of 1 of 4 monkeys following a period of lethargy, anorexia, diarrhea, and coma.

Our dosage regimen more nearly approached 1.25 milligrams per kilogram daily, an amount tolerated without observable toxic reactions by all monkeys receiving it in Schmidt's study. Nevertheless, reduction in red and white blood cell counts was seen in our patients and platelet counts in some cases showed severe reductions. Gastrointestinal disturbance due to the drug was found in a high proportion of our cases. The pigmentation of the digits noted in one case may be analogous to the bronzing of the skin seen in Rhesus monkeys given toxic dosages.

These observations point up the danger of uncontrolled use of pyrimethamine, especially since Schmidt postulates that there is a flat dose-response curve for toxic reactions to this drug. This curve would explain the unpredictability of effects in different individuals. It is encouraging that in all cases, the depression of the formed blood elements was halted on reduction or cessation of administration of the drug, and a return to normal values was obtained. Since such side-reactions as we have found appear reversible, it is believed that the drug will be found to have practical value in properly controlled treatment of toxoplasmic uveitis.

SUMMARY

1. A series of 93 patients referred to the National Institute of Neurological Diseases and Blindness with a tentative diagnosis of uveitis was screened. Of 67 cases of granulomatous uveitis, 39 were given a presumptive diagnosis of uveitis due to ocular toxoplasmosis.

2. Twenty-nine cases of presumptive toxoplasmic uveitis showing evidences of activity were treated with various regimens of pyrimethamine and sulfadiazine.

3. Twenty-five of the 29 cases have shown improvement strongly suggesting favorable response to the therapy. Eight of these showed response during the first week of therapy. Seventeen cases showed response within one month. Three of the remaining cases have had only brief therapy. Only 1 case has not appeared to respond after therapy and reasonable length of observation.

4. Unpleasant and potentially dangerous side effects have been noted in a substantial percentage of the patients during treatment.

5. No cases with a negative dye test showed a positive skin reaction to toxoplasmin. Eighty per cent of the cases with a positive Toxoplasma dye test showed positive skin reactions to toxoplasmin antigen. No case with a positive skin test failed to give a positive dye test.

CONCLUSIONS

1. Positive Toxoplasma dye and skin test results are more frequent among persons with granulomatous uveitis than in the general population.

2. There is evidence strongly suggesting that Toxoplasma gondii is one of the more common causes of granulomatous uveitis in the adult.

3. It is possible to make a diagnosis of presumptive toxoplasmic uveitis by a combination of clinical, laboratory and x-ray means.

4. Pyrimethamine in combination with sulfadiazine may be used as a treatment for toxoplasmic uveitis in humans with expectation that a large proportion will show improvement that can be ascribed to the medication.

5. Objectionable side effects are experienced during therapy with these drugs. Pyrimethamine is a drug that should be used in humans only under close observation of the physician and with frequent laboratory checks, until it has been proven safe to use otherwise.

6. Skin testing with toxoplasmin has more possibilities for widespread clinical use in testing for the presence of anti-toxoplasma antibodies than is provided by the dye test. Cases with negative intradermal tests should be checked by the dye test if toxoplasmosis is suspected.

Note: The skin test antigen used was prepared from peritoneal exudates of Toxoplasma-infected mice.

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DISCUSSION

JACOB KARL FRENKEL, M.D., Kansas City, Kan.: I should like to congratulate Drs. Ryan, Hart, Jacobs and co-workers for presenting us with the first large study since the diagnosis of toxoplasmic uveitis has been proven.

In analyzing the statistical results, I believe we are faced with some difficulties. The patients were highly selected and the pathogenesis of the lesions is probably heterogeneous. Whereas almost all of the patients improved during treatment, it is of interest to note that a quarter of the patients with acute chorioretinitis responded to treatment within one week. Why did the other patients respond more slowly? How much improvement would have taken place on other forms of treatment? How can we explain the effects of Daraprim and sulfadiazine treatment?

I am afraid I cannot shed much light on the happenings in human patients. We have treated patients similarly with Daraprim and sulfadiazine and also with cortisone and injections of antigen. The rationale of the treatment was developed from what we learned from certain animal experiments where known toxoplasmic chorioretinitis was present. In golden hamsters with *chronic* toxoplasmosis, chorioretinitis may occur as a complication; hence we were able to study the dynamic pathogenesis and we found out that there are several ways in which lesions are produced.

There are two forms of Toxoplasma organisms, proliferative forms (fig. 1) and cysts (fig. 2). Both give rise to lesions in the retina. Proliferative forms of Toxoplasma multiply in cells of the retina which are destroyed. Adjacent cells may become necrotic when organisms are liberated from the rup-

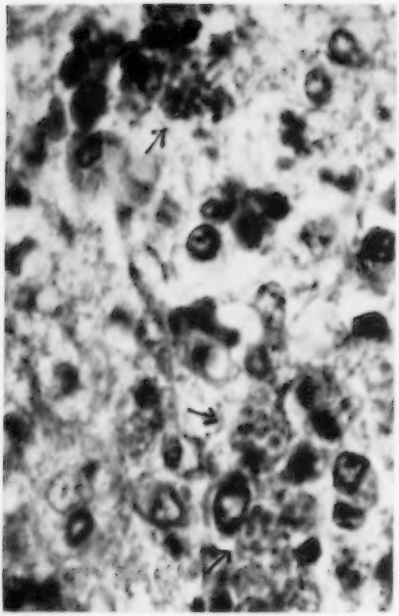

FIG. 1—Proliferative forms of toxoplasma from a hamster with the acute infection. Brain. Hematoxylin. x1130.

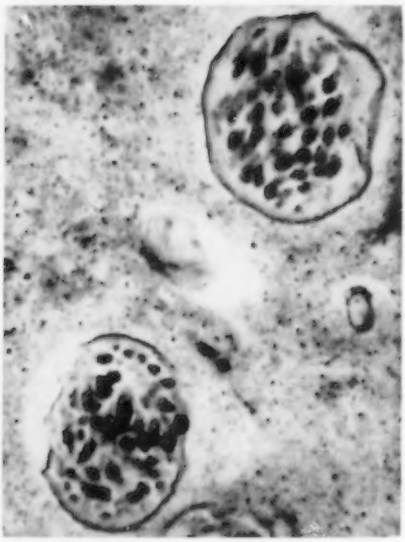

FIG. 2—Cyst forms of toxoplasma from a mouse with the chronic infection. The cyst wall is well demonstrated in this silver impregnation using Mrs. Wilder's method. x1950.

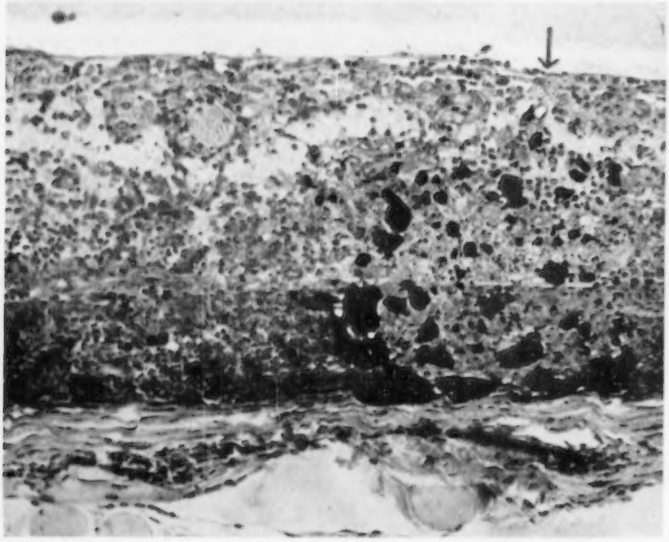

FIG. 3—Focal retinitis with secondary choroiditis due to proliferative toxoplasma (arrow) from hamster with chronic infection. Hematoxylin. x230.

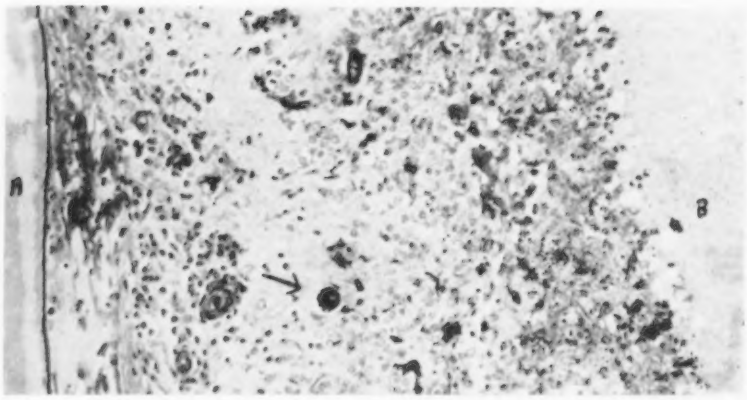

FIG. 4—Retinitis is widespread in this eye of a hamster with the chronic infection. Only cysts are seen, one of which is marked by an arrow. The retina has become adherent to the lens (A) and is separated from the choroid by an inflammatory vesicle (B). Periodic acid-Schiff hematoxylin. x230.

tured cell. An inflammatory reaction ensues involving the retina and secondarily the choroid and sclera (fig. 3). Toxoplasmic proliferation in the retina is not generally accompanied by proliferation in the other viscera; tissue immunity is generally high, as can also be demonstrated by the lack of receptivity to reinfection. The factors allowing multiplication of Toxoplasma in the retina require investigation.

Toxoplasma cysts or "pseudocysts" are enclosed in a resilient, semirigid cyst wall which can fold and tear and stands out prominently when impregnated by silver methods. With the periodic acid-Schiff leucofuchsin technic they stain intensely red due to the glycogen content of the organisms. The cysts lie within the brain and eye and other tissues, seemingly dormant, and do not give rise to histologic reactions until they rupture. They are found commonly in the brain and eye of hamsters with chronic toxoplasmosis due to the RH strain. Although the individual intact cysts do not evoke an inflammatory reaction, the retina (and brain tissue) containing them is often the center of intense chronic inflammation which can be shown to be due to the rupture of cysts (fig. 4). Since no proliferative Toxoplasma are associated with these lesions, we must assume that most, if not all, of the liberated cyst organisms are destroyed. This process of destruction can actually be followed after rupture of the larger *Besnoitia* cyst, which gives rise to lesions in the eye of hamsters similar to those caused by Toxoplasma.

In human beings we can expect to find a dual etiology of lesions, likewise. The proliferative forms destroy cells and cause tissue necrosis, and it is these forms that can be inhibited by chemotherapy. When a cyst ruptures, a lesion of hypersensitivity results, and all the organisms may be destroyed, as we saw in the hamster. It is conceivable that in man organisms may more frequently continue to proliferate, in which case again chemotherapy would be inhibitive.

The rupture of a cyst, due to the release of antigen and the ensuing necrosis, will give rise suddenly to a very intense lesion, which is characteristic of a hypersensitivity reaction. Many acute lesions we see in patients can best be explained on this basis and we cannot expect them to be inhibited specifically by sulfadiazine and Daraprim. However, it is possible that the large doses of Daraprim, used together with sulfadiazine, act as stressor agents, increasing ACTH and glucocorticoid release, which would influence the lesions of hypersensitivity beneficially. Clinically, regression of "lesions" or of the inflammatory response has been observed after administration of both ACTH and cortisone. However, it should be pointed out that the administration of cortisone to animals with chronic toxoplasmosis *due to proliferative organisms* aggravates lesions, probably since it impairs their immunity mechanisms, and the organisms multiply more rapidly.

In the presence of low antibody titers, I have been using subcutaneous antigen injections to increase antibody titers, thereby attempting to decrease the destructive inflammatory response following cyst rupture and the

sudden liberation of antigen in the vulnerable retina. Likewise, this form of treatment may act as a form of desensitization similar to that attempted by tuberculin therapy. Furthermore, the injections of the antigen may give rise to stress, thereby increasing the release of endogenous ACTH and glucocorticoids. That circulating and possibly sessile antibodies are increased by this treatment can be shown by the dye test response, and we have observed clinical results that were beneficial. It is possible that in some of these patients with such low antibody titers, something akin to immunoparalysis is present.

Finally I should like to say that I expect the pathogenesis to differ in the choroid and in the retina. I am not aware that Mrs. Wilder-Foerster has found Toxoplasma organisms in the iris or choroid, whereas she did find them in the retina. Also in the experimental animal the organisms and lesions are primarily in the retina and the changes in the choroid and the anterior segment are secondary. Hence uveitis appears to be secondary to retinitis and we must doubt the toxoplasmic etiology of primary iridocyclitis.

Animal experimentation does give us insight into a variety of dynamic relationships between host and micro-organisms. Both host and micro-organismal factors determine for each patient whether a usually asymtomatic infection develops into clinical disease and which types of treatment may be effective.

DON E. EYLES, Sc.D.,* Memphis, Tenn. (by invitation): The data just presented by Dr. Ryan and his associates strongly indicate that pyrimethamine and sulfonamides administered jointly are effective against toxoplasmosis in man. Since the work of my laboratory has been concerned primarily with experimental chemotherapy rather than the problems of diagnosis, I shall confine my discussion to a consideration of the results of treatment. I might add that the ultimate purpose of our animal experimentation was to obtain information applicable to the management of the disease in man. It is very gratifying that the animal studies may be bearing fruit, for so often they do not.

A question which presents itself immediately with respect to the work just presented is how do the drugs exert their influence. It is most probable that both pyrimethamine and the sulfonamides interfere with the complex of reactions of the enzyme system in which p-aminobenzoic acid and folic acid play a part. Since this system is involved in the synthesis of nucleoproteins, drugs affecting it would be expected to act primarily upon actively multiplying parasites. One would not necessarily expect action against the chronic, pseudocyst stage; therefore it is quite possible that the action in Dr. Ryan's cases was to eliminate or control foci of active multiplication. Whether or not living nonmultiplicative stages remain in the eyes of these patients is a matter for future investigation, and I suppose the authors are following these patients to determine if renewed activity takes place.

In our work we have attempted to treat rats with chronic infections characterized by pseudocysts located in the brain. In one such experiment moderate dosages of pyrimethamine and sulfadiazine failed to eradicate these parasites. Further work is proceeding with larger doses and with varying conditions.

The work just presented by Dr. Ryan is exploratory and, as might be expected, a variety of regimens were used. Future work must determine the optimum. Future work must also determine the importance of the synergistic effect of pyrimethamine and the sulfonamides as compared with the effect of the drugs alone in man. Despite the necessity for these studies I should like to emphasize the strong degree of interaction between the two drugs. I do this for the possible guidance of those who may wish to use these drugs in their practice and not necessarily as a part of a research program.

In our animal work we have used large numbers of mice to determine the cure rates with pyrimethamine and sulfadiazine both alone and in mixture. Through an involved, but sound, method of statistical analysis, we can demonstrate that the mixture is more than six times as active in producing cure as would be expected from additive action alone. In the animal work we can reduce the amounts of the drugs to very low levels and still obtain cure. It is our opinion that, lacking information to the contrary, the drugs jointly administered would be expected to have the most favorable effect in man.

Dr. Ryan and his colleagues used sulfadiazine in most of their studies. Sulfadiazine is probably the best choice, although animal work indicates that sulfamerazine and sulfamethazine are about as active. Since the toxic effects are a definite hazard of this treatment, it might be wisest to use a triple sulfa preparation composed of the preceding three drugs. A further word is in order about the selection of a sulfonamide. There is a great variation between them in their antitoxoplasmic effect.

* Dr. Eyles is at the Laboratory of Tropical Diseases, U. S. Public Health Service, Memphis, Tenn.

In addition, we know that all do not diffuse into the eye well (for example, sulfathiazole). Recent work in our laboratory has indicated that the popular compounds, sulfisoxazole (Gantricin) and sulfametine (Elkosin) have a very poor effect upon Toxoplasma as compared with sulfadiazine. It is our opinion that these drugs should not be chosen.

Dr. Ryan pointed out that toxicity occurred in his patients to a degree sufficient to cause concern. We recently treated a case of acute toxoplasmosis in a laboratory worker with pyrimethamine and triple sulfas and observed the same nausea and anorexia seen frequently by Dr. Ryan. I might add that we obtained an apparent dramatic therapeutic response as the patient became fever free within 36 hours of the initiation of treatment, and other symptoms, except those attributed to drug toxicity, disappeared immediately.

Dr. Ryan's patients were given dosages of pyrimethamine which were high and which were continued for long periods. As a matter of fact the amounts given in some cases approached levels just below those found toxic in the Rhesus monkey by Schmidt (2.50 mg. per kilogram). Schmidt found in his work a great subject to subject and species to species variation in tolerance to this drug, so, until more is known of the pharmacological action, the very high dosages should be used only cautiously and under close medical supervision. Coatney and his colleagues found a daily dose of 25 mg. per day tolerated well by man for 42 days although some showed evidence of bone marrow depression. Unless close medical supervision is practicable, this last amount should probably be the highest prescribed for medication over a long period. I should like to inquire of Dr. Ryan if good response was obtained at this level, or was response better with the higher dosages.

Schmidt found that the toxicity of pyrimethamine, although varying from species to species, was in general related to the tissue level of the drug. This would point to the desirability of using some method of tissue level measurement as an aid to proper adjustment of the dose. This may prove impracticable, due to technical difficulties of measurement at the levels used in man. I would like to inquire of Dr. Ryan if any blood level measurements were attempted.

Another factor of uncertainty is the effect of the joint administration of the drugs on their toxicity. In mice we have studied this question and found no interaction of the two drugs in the production of either chronic or acute toxicity.

In spite of the problem created by the toxic response to these drugs, the absence of drugs effective against toxoplasmosis which are tolerated better makes their use appear justified.

In conclusion, we all recognize the difficulty of establishing a diagnosis of ocular toxoplasmosis, and we can see the difficulties in assessing the results of treatment. Considering these circumstances I think that Dr. Ryan and his associates have made an important contribution to our knowledge.

LEON JACOBS, Ph.D., Bethesda, Md. (by invitation): What I have to say is not so much in the nature of a discussion of this paper but of an announcement regarding diagnostic facilities offered to ophthalmologists for the performance of tests for toxoplasmosis.

As many of you have been made aware, about two years ago the Research Grants Division of the U. S. Public Health Service organized a committee to investigate the usefulness of serologic tests in the diagnosis of toxoplasmosis and after two meetings made some recommendations which led to the establishment of a laboratory at the Communicable Disease Center in Georgia for the testing of sera from acute cases of congenital toxoplasmosis.

A report describing the signs and indications for the diagnosis of toxoplasmosis was published in the Journal of the American Medical Association in November, 1952. It was stated at that time that there was no proof of the toxoplasmic etiology of uveitis and, therefore, it was considered that dye tests were not indicated on ocular cases. Since that time, of course, developments have come rapidly, and we now know that Toxoplasma may be the cause of uveitis. Most of us suspect that it is a rather frequent cause.

Therefore, just about two weeks ago I went before the Research Grants Division of the National Institutes of Health and asked that another committee be established to go over their collective experience with the dye test, skin test, and complement fixation test and to decide what recommendations could be made to ophthalmologists and what facilities might be set up to provide for ophthalmologists the same service that is now available to the pediatricians in the diagnosis of congenital cases. The committee will meet soon, I hope, and will be able to come out with some recommendations which we will submit to the journals of ophthalmology, so that all of you may be made aware of what facilities, if any, will be made available.

It is my own opinion, on the basis of this study and on the basis of other studies done with Dr. Alan Woods and with Major John R. Fair at Walter Reed Army Hospital, that the skin test will become a valuable aid for ophthalmologists, because it is not important that a dye test titer be obtained and the result, whether positive or negative, is a qualitative thing. This would be an extremely easy technic compared with dye test procedures. I think that if on skin testing a negative result is obtained, dye tests should be done to confirm it.

I give you these opinions as my own. They will not necessarily be the judgment of the committee on the basis of its collective experience. But I ask you to be a little patient and to look forward some time in the near future to getting some help in the diagnosis of toxoplasmic uveitis.

DR. HART: I wish to say a word about the practical clinical diagnosis of toxoplasmic uveitis. The dye test has the same significance as a positive tuberculin test in that it indicates only that the patient has had contact with the organism, regardless of the level of the dye test, whether it is high or low. For that reason we are still faced with the clinical problem of a complete evaluation of the patient. Having eliminated, on a reasonable basis, all other causes for granuloma, and having a positive dye test in a patient with active uveitis, we then make a presumptive diagnosis of uveitis due to this cause.

At the present time we are still evaluating treatment; therefore, we do not include it as a part of the diagnosis. However, we feel that in view of our present clinical experience with this treatment given a patient who fits this description, if we get a prompt and adequate response to treatment, we have a marked strengthening of our presumptive diagnosis.

The lesion, as you know, may have the appearance of any granulomatous process. It may appear anteriorly in the uveal tract, or posteriorly, or both. It may, or may not, involve the macula, and one cannot make the diagnosis on the basis of appearance. Probably the only instance in which we can feel thoroughly confident about the diagnosis is in a congenital case where the parents show positive blood reaction and the lesion has the appearance described by Dr. Hogan. Then if we add to that our response to treatment, we feel assured about the diagnosis. The patients whom we have studied have been examined by independent clinical investigators and their conclusions have been uniform. We have had a remission in one case which responded to a second course of treatment without further remission.

Inasmuch as we have eight cases that responded within one week and all other cases responded within a period of a month, we feel very much encouraged about this form of treatment.

A PERIMETER MOUNTED ON A HEADBAND

AARON ROTH, M.D.
BROOKLYN, N. Y.

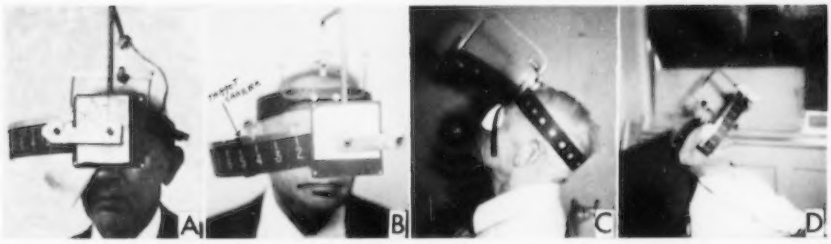

FIG. 1—Perimeter mounted on a head band. A—The guide plate is set at 180 degree meridian, the patient is in the upright position. B—the target carrier. C—the patient's head is tilted backward. D—the patient is recumbent.

THE perimeter mounted on a headband is a light-weight portable device for use in testing patients in bed as well as for general office use (fig. 1). The fixation target is a small mirror such as has been used on the Schweiger perimeter. This mirror is 170 millimeters from the eye (half the distance of the Ferre-Rand). It will be noted that the fixation target is the constant end-point of the visual line, and as long as the patient sees his eye in the mirror he may move his head about freely and the proper testing of the visual field will not be disturbed. Once the examiner has adjusted the fixation target to the eye for the patient to look at, continued fixation is no problem except under the most unusual circumstances.

The mirror occupies 5 degrees of the field and may be replaced by a background disc bearing a one or two degree target for fixation. The arc has an edge-sliding rack to carry a sliding target frame for interchangeable targets. The perimeter is illuminated by a 14-watt G. E. bulb activated by a fixed transformer. One lamp is attached to either side of the headband frame. When the right eye is examined, the right side lamp is switched on; similarly the left lamp is lighted up for examination of the left eye.

Provision for semi-automatic charting is illustrated. As the arc moves, a numbered guide plate moves correspondingly over the chart, but the chart (as placed in the chart rack) remains stationary and upright and one sees the graph of the visual field as it is actually unfolded during the course of the testing. The guide plate has perforation corresponding to the numerals: the examiner passes a stylet through these perforations to mark the chart. The resulting graph is as the doctor sees the field when facing the patient. By placing another chart face to face with the marked one and perforating through, one obtains the standard (as the patient sees his own field) record.

Presented as a *New Instrument* at the Fifty-Eighth Annual Session of the American Academy of Ophthalmology and Otolaryngology, Oct. 11-16, 1953, Chicago, Ill.

For speedy clinic testing it may be practical to use a 60-watt G. E. frosted lamp one foot above, behind and lateral to the fixation target, or for a quick general survey, daylight at the window. For bed cases the attached illumination will be found almost indispensable. In the recumbent position the attached illumination is extremely practical.

ATTACHABLE HEADBAND CAMPIMETER

AARON ROTH, M.D.
BROOKLYN, N. Y.

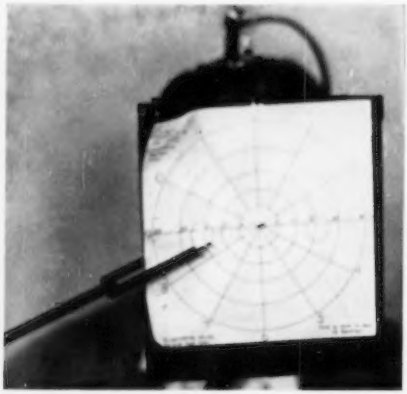

FIGURE I.

A SHORT range (170 mm.) campimeter is attachable to the special headband as used with the headband perimeter (fig. 1). The patient's side of the screen is an unmarked black felt field. On the other side the standard field form for this distance is printed black on white paper (a removable chart for the doctor's files). By means of a U-shaped target holder (like a tuning fork) carrying duplicate targets, the examiner follows the target on the black on white field as the patient sees his target on the black field. The examiner marks the chart as he proceeds with the test. The duplicate target carrier may be a sliding mechanical attachment connected with the screen or a simple double-pronged carrier as illustrated.

Presented as a *New Instrument* at the Fifty-Eighth Annual Session of the American Academy of Ophthalmology and Otolaryngology, Oct. 11-16, 1953, Chicago, Ill.

In Memoriam

HARRIS PEYTON MOSHER
A.B., M.D., Sc.D., LL.D.

1867 - 1954

Dr. Harris Peyton Mosher died suddenly on November 4, 1951, in his eighty-eighth year of life. He was born on October 21, 1867, in Woodsford, Maine, a town named after his grandfather. He received his early education in the Woodsford schools, then the Boston Latin School. He graduated from Harvard College in 1892 and from the Harvard Medical School in 1896. He then served as a Surgical House Officer at the Massachusetts General Hospital and at the Boston Lying-in Hospital.

During the Spanish-American War, he served as contract surgeon at Mantauk Point, Long Island. After three years of private practice, he prepared himself for otolaryngology by studying with Janssen in Berlin and in Schwartze's old clinic in Haille under Gurnet. Returning from Berlin, he brought back Janssen's ideas on anatomy, and he began teaching at the Harvard Medical School in the Department of Otolaryngology. He started the first concentrated short course in sinus anatomy, one of the first such courses started in America. This course has continued except for two short interruptions during World Wars I and II.

Teaching has been by visualization, free-hand drawings, tracings and reduplication of specimens in plaster. It is concentrated, and students working under Dr. Mosher worked from early morning till late at night, Sundays and holidays included. He felt that they came to obtain specific knowledge in the shortest time possible, and it was his ambition to accommodate them.

Dr. Mosher was appointed Professor of Otolaryngology at Harvard Medical School in 1921; and when the Department was taken over by the Massachusetts Eye and Ear Infirmary from the Massachusetts General Hospital, he became Chief of Otolaryngology at the Infirmary as well as the General Hospital. In 1933, at the age of 66, when he would ordinarily retire from the faculty, he was given the Walter Augustus LeCompte Chair of Otology. He was the first man since Oliver Wendell Holmes to hold two chairs at the Harvard Medical School. He held this position until his retirement in 1939.

He was awarded a Doctor of Science degree by the University of Pennsylvania in 1925; by Colby College in 1937; by Wayne University, a Doctor of Laws degree in 1939; and a Doctor of Science Degree by Jefferson College in Philadelphia in 1942.

Dr. Mosher was a member of all the national otolaryngological societies and served as President of all of them. He was also a member of the laryngological societies of Paris, Vienna and Scotland, and a corresponding member of the Royal Medical Society of London. He was the first American to give the Semon Lecture in 1934, at which time he received the Semon Medal from the College of London. He received the American Laryngological Association Medal in 1934.

During the First World War he was assigned to the Personnel Division of the Otolaryngological Service of the Army Hospitals here and abroad. Later he was assigned to the Surgeon-General's Office in Washington. He was discharged with the rank of Colonel.

Dr. Mosher's contributions to Otolaryngology have been many. An author of over one hundred papers, he has dealt with the anatomy of the sinuses, the development of the esophagoscope, with the histopathology of the esophagus, with the wire-gauze drain for brain abscess, surgical relief for dacryocystitis, surgical treatment of pus in the neck with osteomyelitis of the frontal bone. From his experience in World War I, he recognized the necessity of an Examining Board and organized the American Board of Otolaryngology. He served as its president from its inception to 1947.

Dr. Mosher was President of the American Academy of Ophthalmology and Otolaryngology in 1929.

Mrs. Mosher survives him.

In Memoriam

DR. GORDON BALGARNIE NEW
1885 - 1954

DR. GORDON BALGARNIE NEW

1885 - 1954

Dr. Gordon Balgarnie New was born in Hamilton, Ontario, Canada, on November 6, 1885, the son of Marian Balgarnie New and Henry New. He received the degree of doctor of dental surgery from the University of Toronto in 1906, that of bachelor of medicine in 1909, and that of doctor of medicine in 1915. In 1909 and 1910 he was an intern in the City Hospital of Hamilton, Ontario.

Dr. New entered the Mayo Clinic on May 20, 1910, as head of the Section of Postoperative Treatment, and as an assistant in laryngology and rhinology. In February, 1911, he was appointed head of the Section of Laryngology, Oral and Plastic Surgery. When the Mayo Foundation was established as a part of the Graduate School of the University of Minnesota in 1915, Dr. New was appointed assistant professor of rhinology, laryngology and stomatology. Later the designation was changed to professor of laryngology. Dr. New became a senior consultant on January 1, 1950, and he retired from the staff of the Mayo Clinic on December 31, 1950.

Dr. New was among the pioneers in the field of plastic surgery in this country and abroad, and he was extensively honored for his contributions to a branch of surgery many times expanded from the beginning point at which he entered it as a young man in 1911. In 1952 he was awarded a silver plaque by the American Society of Plastic and Reconstructive Surgery for his contributions to plastic surgery. The award was the highest that could be given to a surgeon by that Society.

Many other honors came to Dr. New. He was president of the American Association of Oral and Plastic Surgeons in 1939, president of the American Academy of Ophthalmology and Otolaryngology in 1945 and 1946, president of the Pan-American Congress of Otolaryngology in 1946. In 1947 he served as second vice president of the American College of Surgeons. In 1938 his exhibit on the correction of facial deformities by means of plastic surgery won the certificate of merit of the American Medical Association, and in 1950 his exhibit on cancer of the mouth, which he prepared in association with Drs. John B. Erich and Kenneth D. Devine, won the first award of the American Academy of Ophthalmology and Otolaryngology. He was an international authority on tumors of the nose and throat.

Dr. New was certified as a specialist in otolaryngology in 1925 by the American Board of Otolaryngology, and as a specialist in plastic surgery in 1939 by the American Board of Plastic Surgery. He was a fellow of the American College of Surgeons, the American Medical Association, the American Laryngological, Rhinological and Otological Society, the American Laryngological Association, the American Academy of Ophthalmology and Otolaryngology, the American Society of Plastic and Reconstructive Surgery, the Minnesota Academy of Ophthalmology and Otolaryngology, American Association of Oral and Plastic Surgeons, and the Society of the Sigma Xi.

Dr. New was married to Miss Ethel Bailey on June 28, 1911. Dr. and Mrs. New had three children: Marian Elizabeth who died in 1939, Gordon of Solvang, California, and Robert of Lakewood, Ohio.

Dr. New died at the Methodist Hospital in Rochester, Minnesota, October 28, 1954, after an illness of a few days.

In Memoriam

Millard Fillmore Arbuckle.....St. Louis, Missouri
October 23, 1954

Roger Skelton Grimmett.....Vancouver, B. C., Canada
October 13, 1954

Charles Elliott Hays.....Johnstown, Pennsylvania
September 23, 1954

Charles William Henderson.....Columbus, Georgia
August 9, 1954

John Clair Howard, Jr.....Kansas City, Missouri
November 24, 1954

Charles Kelley Lewis.....Memphis, Tennessee
August 26, 1954

Andrew Walker McAlester, Jr.....Kansas City, Missouri
August 17, 1954

Harris Peyton Mosher.....Marblehead, Massachusetts
November 4, 1954

Gordon Balgarnie New.....Rochester, Minnesota
October 28, 1954

Ralph Stevens Pendexter.....Old Greenwich, Connecticut
September 29, 1954

Roy Philip Scholz.....St. Louis, Missouri
September 25, 1954

Irwin Gabriel Spiesman.....Maywood, Illinois
September 11, 1954

Marvin James Tamari.....Chicago, Illinois
October 11, 1954

James Wallace Tanner.....Eau Claire, Wisconsin
November 17, 1954

Henry Tolman, Jr.....Salem, Massachusetts
August 5, 1954

Ambert Hastie Veitch.....Toronto, Ont., Canada
September 28, 1954

Merritt Whitacre Wheeler.....Lake Elmo, Minnesota
June 21, 1954

Otis Rudolph Wolfe.....Marshalltown, Iowa
September 11, 1954

TRANSACTIONS
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Editorials

AMERICAN PHYSICIANS — AND OTHERS

There is food for thought in all current discussions, personal and organizational, of world affairs and international relations that has little to do with what is so often discussed. As to the desirability, even the necessity, of world-wide understanding and cooperation, there can hardly be two opinions nowadays. It is perhaps this very unanimity with regard to the great general principle that sometimes betrays us into neglect of certain highly significant personal details.

We are so accustomed to organized action and "group thinking" that we bypass the personal element—a tragic mistake, for friendship is a personal thing, and it does not cease to be personal when multiplied by statistics on population. Every nation in the world is composed, not of -isms and -ologies, but of individual persons. We cannot make friends with a nation in the abstract. We can, if we will, make friends with the people of any nation, on the same terms that bind us to our friends at home.

As physicians we have a large stake in universal friendship. As American physicians we have also a major responsibility, commensurate with the advantages we enjoy. To be generous? Certainly that; and so we are, in the material sense. We have a well-established reputation for "giving till it hurts." What more can be asked of us while we continue to give so much so freely?

One thing, perhaps: that we give with UNDERSTANDING, not only of the need but of the recipient. There is a deeper generosity than material aid requires, and it is the only kind that will win the world's friendship for us. The very nature of friendship presupposes both giving and receiving, and if there is a generic American fault so far as friendship is concerned, it is the assumption that we have everything to give and nothing to gain.

The fact is that Americans in general, and physicians in particular, have very much to gain from international friendship. If we hope to gain it, we must not turn our potential friends into mere recipients of our overabundance. It is not enough to send material things to physicians who can get along well, and are getting along well, with that they have. The free exchange of ideas and information and the building up of mutual understanding and confidence

would be a far better gift. Foreign physicians are proud, and justly so, of what they have accomplished with their equipment and under considerable difficulties.

We must not say of them, or even imply it, "Poor devils, they've got practically nothing to work with." They will not like it, and one cannot blame them. They have a great deal to work with—courage, patience, ingenuity, skill and knowledge. They have much to teach us, perhaps more than we can do in return.

It is so easy to think impatiently of foreign countries, so easy to wonder why they aren't like us. The slight shift of thought to "Why *should* they be?" is more than worth the mental effort it takes. They are like us in essential humanity; if they differ from us in manners, customs and traditions, it is only because, like us, they are proud of their homelands.

Some of us have foreign friends of many years' standing — friends with whom it is a joy to meet and talk; friends as brilliant and stimulating as any we have at home; friends as wise and witty, as warm-hearted and loyal, as any man can be. Sometimes they astonish us, considering their achievements, by their humility, and very often they startle us by their generosity in receiving our generosity—for, make no mistake about it, there is a generosity of taking as well as of giving; to be able to accept with grace and without servility is a rare gift.

This could be taught us, too, by many of them. Both they and we would be happier if we learned it. In this way a long-term feeling of friendliness would be created rather than a sensation of momentary gratitude. It seems to me that the exchange of information and of ideas, that mutual understanding, will build better cooperative feeling with foreign confreres.

HUGH A. KUHN, M.D.

Letter to the Editor

XVI ALL-INDIA OPHTHALMOLOGICAL CONFERENCE

Bombay — 1955

19, Pherozshah Mehta Road
Bombay 1.
November 3, 1954

The United States Information Service,
Adelphi Annexe,
Queen's Road,
Bombay-1.

Sirs:

I have the honor to inform you that the 16th All-India Ophthalmological Conference will be held in Bombay in the first week of March 1955 at the Cowasji Jehangir Hall.

The Reception Committee cordially welcomes eminent ophthalmic medical practitioners from your country as delegates for the conference. A busy program of both scientific and general interest is being prepared by the committee for the delegates. Bombay is also at its best early in March.

The Conference also plans to hold scientific and trade exhibitions during its four-day session.

I shall be grateful if you would kindly circulate this information to the eminent ophthalmic medical practitioners and ophthalmic traders in your country.

I shall be glad to know if your Services can suggest any item of instruction or entertainment for the Conference delegates during the four-day session.

I beg to remain
Sir
Yours faithfully,
sd: V. V. GUPTE
Secretary

INTERNATIONAL ASSOCIATION OF EYE, EAR, NOSE AND THROAT SOCIETY SECRETARIES ANNUAL MEETING — 1954

The fifteenth annual meeting of the International Association of Eye, Ear, Nose and Throat Society Secretaries was held at the Waldorf-Astoria Hotel in New York City at 5:30 p.m., Tuesday, September 21, 1954, during the annual session of the American Academy of Ophthalmology and Otolaryngology. The Academy ensured the success of the meeting by graciously inviting our Secretaries' Association to dinner. Since this meeting followed so closely the meeting of the International Congress of Ophthalmology, we were fortunate in having as our guests the following men from abroad: Dr. Moacyr Alvaro, Brazil; Dr. A. C. Copper, The Netherlands; Dr. Gosta Karpe, Sweden; Dr. B. Knape, Finland; Dr. A. Urrets-Zavalia, Argentina; Dr. C. Thomas, France; Dr. Adolph Franceschetti, Switzerland; Dr. Trevor-Roper, England; Dr. Pico, Puerto Rico; Dr. James Beaumont, New Zealand; Dr. T. P. N. Sinha, India; Dr. A.A.J.J. Van Der Eerden, Holland.

The meeting was called to order by the President, Dr. Edley Jones of Vicksburg, Mississippi. He welcomed the fifty-five Secretaries present who had come from various countries throughout the world — the majority, of course, from the United States.

The President, Dr. Jones, reported that there had been a tremendous interest aroused all over the world in the activities of our society. The Secretary, Dr. Daniel DeStio of Pittsburgh, Pennsylvania, reported on the complete success of the securing of hosts for the Foreign Delegates' Lounge that the American Academy of Ophthalmology and Otolaryngology had established during the International Congress of Ophthalmology. He warmly thanked the twenty-four Secretaries who kindly gave their time and effort in the completion of this task for which the American Academy was very grateful. Dr. Roland Myers of Memphis, Tennessee, Chairman of the Auditing Committee, noting the increased expenditures resulting from our international activities, moved that the annual dues of our Association should be $10.00. This motion was seconded by Dr. Charles E. Jaeckle of New Jersey. It was unanimously passed. Dr. Moacyr Alvaro of Brazil, Chairman of the Extension Committee, reported on the many communications that he has received in his correspondence with Secretaries in Europe and other parts of the world. Dr. James Monahan of Pennsylvania, Chairman of the Service Committee, reported that he had made arrangements for free housing at Columbia University Residence Halls for some delegates and guests of the International Congress of Ophthalmology. Dr. Paul Craig of Reading, Pennsylvania, Editor of our Bulletin, reported that he is making progress in the development of a Bulletin for our organization. At present, however, he stated that he would continue to use the designated pages in the TRANSACTIONS of the American Academy of Ophthalmology and Otolaryngology to send the messages of our organization to its members all over the world. He asked that all of our members read these pages in every issue of the TRANSACTIONS. It was noted that practically all of our members are members of the American Academy of Ophthalmology and Otolaryngology. For those few in this country who are

not members of the American Academy and for our members in distant countries, a reprint of the material published will be sent to each individual member.

Mr. Wilson, special representative of CARE, spoke to the group and described how his organization is in a position to send much needed medical equipment to foreign lands more cheaply than regular commercial houses could. He strongly urged that any local society in the United States wishing to make contributions of medical equipment, etc., to foreign lands should contact him at CARE headquarters.

Dr. Paul Holinger of Chicago, Secretary-General of the Sixth International Congress of Otolaryngology, stated that the Congress will meet at the Statler Hotel, Washington, D. C., May 5-10, 1957. He stated that our organization would be depended upon for its cooperation in making this International Congress a highly successful one.

Dr. Moacyr Alvaro, who is a member of the International Council of Ophthalmology, stated that the Council has given our organization official recognition as an international body and has asked us to gather and maintain information and data on two important problems:

First: Keeping information up to date on the Index Ophthalmologicus which lists all the ophthalmologists and Ophthalmological Societies of the world.

Second: Gathering information on the methods of teaching ophthalmology throughout the world.

It was moved by Dr. Joseph Weintraub of Cincinnati, Ohio, seconded by Dr. Roland Myers of Tennessee and unanimously passed that we accept these responsibilities.

Dr. William Benedict, Executive Secretary-Treasurer of the American Academy of Ophthalmology and Otolaryngology, was present. He stated that our Society can be of great service in the development of International Congresses in our two respective fields. He felt that upon our own initiative we could develop other activities which would be useful to advancing knowledge of our specialties throughout the world.

The President then called upon several of our foreign guests to speak. These included Dr. Copper of Holland, who is Editor of the Index Ophthalmologicus. He earnestly seeks our help in the maintenance of this Index. Dr. Franceschetti of Switzerland, Dr. Karpe of Sweden, Dr. Trevor-Roper of England and Dr. Thomas of France all made short speeches of great appreciation for the opportunity to meet with us. Dr. Thomas spoke in French. They all were very enthusiastic about the benefits which would result from the activities of our organization.

Dr. Kenneth Craft of Indianapolis, Indiana, Chairman of the Nominating Committee, made the following nominations: President-Elect, Dr. Willard Goff, Seattle, Washington; Secretary-Treasurer, Dr. Daniel DeStio, Pittsburgh, Pennsylvania. As there were no further nominations from the floor, the Secretary was directed to cast a unanimous ballot for them and they were thus duly elected. Dr. Jones then escorted the new President, Dr. Roderick Macdonald of Rock Hill, South Carolina, to the chair. Dr. Macdonald requested the continued cooperation of all the Secretaries in order to carry on successfully the work of the Association. The meeting was then adjourned.

DANIEL S. DESTIO, M.D.
Secretary-Treasurer

COUNCIL MINUTES

FIFTY-NINTH ANNUAL SESSION

September 18 and 22, 1954
Waldorf-Astoria, New York

Present:

Walter H. Theobald, Algernon B. Reese, Francis H. Adler, Theodore E. Walsh, Dohrmann K. Pischel, Derrick Vail, James Milton Robb, Frederick C. Cordes, William L. Benedict, Kenneth L. Roper, Lawrence R. Boies, A. D. Ruedemann, Sr., Dean M. Lierle, Daniel Snydacker, Erling W. Hansen, John H. Dunnington, Francis E. LeJeune, S. Rodman Irvine, Sam E. Roberts.

The meeting was called to order at 9:10 a.m. by Dr. Walter H. Theobald, President.

I

The Executive Secretary, Dr. William L. Benedict, reported on the membership as follows:

1. *Fellowship* (as of August 31, 1954)

Junior	4,955
Senior	283
Life	417
Honorary	29
Inactive	55
	5,739

2. *Candidates*:

Complete	274
Incomplete	2
	276

3. *Elevations to Senior Fellowship on January 1, 1955*:

Baldwin, Herschel E. .....Danville, Ill.
Bassen, Edward J. .....New York, N. Y.
Baum, William Wells .....Salem, Ore.
Beals, C. Wearne .....DuBois, Pa.
Bender, Henry A. .....Waterloo, Iowa
Bender, Morris Samuel ....Jamaica, N. Y.
Bernheimer, L. Benno .....Chicago, Ill.
Boemer, Lilburn Casper .....St. Louis, Mo.
Bruce, Gordon Murphy ....New York, N. Y.
Carpenter, Chapin .....Philadephia, Pa.
Carter, Earl Dwight .....Wichita, Kan.
Chandler, Gail Ellsworth .....Miami, Fla.
Cohoe, Don A. .....Detroit, Mich.
Conway, John Moore .....Pittsburgh, Pa.
Cortopassi, Andre John .....Saginaw, Mich.
Corya, Harold W. .....Quoge, L. I., N. Y.
Cummings, George Otis .....Portland, Me.
Cutino, Rodolph M. .....Brooklyn, N. Y.
Davies, Harry Francis ....Washington, D. C.
Day, Kenneth Mosier .....Pittsburgh, Pa.
Depping, Charles William ..New York, N. Y.
Dobbs, Otto Ross .....Greencastle, Ind.
Fackler, Charles Lewis .....York, Pa.
Fineberg, Maxwell .....St. Louis, Mo.
Gabriel, Carson King .....Quincy, Ill.
Gilliland, Oliver Sheley ....Kansas City, Mo.
Gouterman, Joseph I. .....Philadelphia, Pa.
Grant, Hendrie Walter .....St. Paul, Minn.
Greenwood, Glenn Jackson ....Los Angeles, Calif.
Griffith, Harold M. .....Johnstown, Pa.
Hahn, William Horace .....Newark, N. J.
Hardie, George Christopher ..Jackson, Mich.
Harris, Edward Williams ..Columbus, Ohio
Heetderks, Dewey Ralph, Grand Rapids, Mich.
Henderson, Lawrence Edward ...Watertown, N. Y.
Hickey, Harold Lowry .....Denver, Colo.
Hicks, William Joseph ....Middletown, N. Y.
Hodge, George Esplin .....Montreal, Que., Canada
Hopkins, Guy Huskinson .....Pueblo, Colo.
Hunter, James Finlay ....Madisonville, Ky.
Hunter, Robert John .....Philadelphia, Pa.
Joynt, Martin John .....LeMars, Iowa
Judd, John H. .....Omaha, Neb.
Keiper, George Frederick ....Visalia, Calif.
Kline, Oram R. .....Camden, N. J.
Knauer, William Jerome ..Jacksonville, Fla.
Kuhn, Hedwig Stieglitz .....Hammond, Ind.
Laff, Herman I. .....Denver, Colo.
Landis, James Everhart .....Reading, Pa.
Leavenworth, Richard Ormond ....St. Paul, Minn.
Leech, Vernon Mayne .....Chicago, Ill.
Lingeman, Byron Newton ....Crawfordsville, Ind.
Livingston, George Shaynin ....Chicago, Ill.
Lukens, John Alfred .....Toledo, Ohio
Lurie, Moses H. .....Boston, Mass.
Macdonald, Joseph C. ..Oklahoma City, Okla.
Malone, Frank B. .....Lubbock, Texas
Marsden, Wilson Conrad ..Wilkes-Barre, Pa.
Martin, William Owen, Jr. ....Atlanta, Ga.
McCormick, Thomas Francis ....Milwaukee, Wis.

Some items are omitted from this report. Complete minutes are on file in the office of the Executive Secretary-Treasurer.

McCoy, Leslie Layton .....Seattle, Wash.
McGillicuddy, Oliver B. .....Lansing, Mich.
McHenry, Lawrence Chester, Oklahoma City, Okla.
Means, Russell Garrett .....Columbus, Ohio
Merica, Forrest Wayne ....Lakewood, Ohio
Moore, Paul Guthrie .....Cleveland, Ohio
Moore, Paul McNary, Jr. ...Cleveland, Ohio
Murphy, Albert Bernard .....Everett, Wash.
Nugent, Oscar Benton .....Chicago, Ill.
O'Brien, Gerald Richard ....Brooklyn, N. Y.
Oppegaard, Chester Leonard ....Crookston, Minn.
Pace, Errett .....Paducah, Ky.
Paul, William C. .....Santa Ana, Calif.
Payne, Virgil LeRoy .....Pine Bluff, Ark.
Persky, Abram H. .....Philadelphia, Pa.
Pope, Ernest Clark .....Birmingham, Ala.
Potter, Willis A. .....Detroit, Mich.
Preston, Henry Grant ....Harrisonburg, Va.
Reed, William Wallace .....Topeka, Kan.
Reid, Horace Withers .....Cincinnati, Ohio
Rigg, James Paul .....Grand Junction, Colo.
Robison, James Thomas .....Austin, Texas
Rubenstein, Asher Harry ....Syracuse, N. Y.
Schluer, Elmer Pfingsten ....St. Louis, Mo.
Shapiro, Sherman Lawrence ....Chicago, Ill.
Simons, Neal Samuel .....Whitehall, Wis.
Simpson, Morris Bigelow ..Kansas City, Mo.
Sloane, Henry Oscar .....Philadelphia, Pa.
Smith, William Leroy ..Salt Lake City, Utah
Stanley, Court Roger ....Worthington, Minn.
Stonecypher, David Daniel ...Nebraska City, Neb.
Theobald, Walter Henry .....Chicago, Ill.
Tillotson, Rulon Squires ..Sacramento, Calif.
Tomb, Everett Hale .....Framingham, Mass.
Toot, Joseph Frederick .....Canton, Ohio
Ward, James W. .....Greenville, Texas
Watkins, Harold R. .....Bloomington, Ill.
Webster, Franklin Raymond, Syracuse, N. Y.
Weeth, Charles Reed .....Brooklyn, N. Y.
Weidlein, Ivan Ford .....Cleveland, O.
Wenner, Waldemar Thomas, St. Cloud, Minn.
Wetzel, John Otto ....Fort Lauderdale, Fla.
Wexler, David .....New York, N. Y.
Whitney, Elmer Lemuel .....Detroit, Mich.
Wilkinson, Arthur Paul .....Detroit, Mich.

4. *Elevations to Life Fellowship as of January 1, 1955:*

Asbury, Mary Knight .....Cincinnati, Ohio
Atkinson, Walter Sydney ..Watertown, N. Y.
Beyer, Arthur George .....Cincinnati, Ohio
Burdick, Austin F. .....Lansing, Mich.
Chase, Sumner B. .....Fort Dodge, Iowa
Costen, James B. .....St. Louis, Mo.
Fisher, James A. .....Asbury Park, N. J.
Fowler, Earle B. .....Chicago, Ill.
Fraser, Robert Howard, Battle Creek, Mich.
Friedenwald, Jonas Stein ....Baltimore, Md.
Furstenberg, Albert Carl ..Ann Arbor, Mich.
Gatewood, Emmette Trible ....Richmond, Va.
Gillette, David Filsinger ....Syracuse, N. Y.
Hofmann, William Peter ..Davenport, Iowa
Hughes, Lee Westlake .....Newark, N. J.
Jones, Leonard Warburton ..Rochester, N. Y.
Knapp, Frank Norris .....Duluth, Minn.
Lederer, Francis Loeffler .....Chicago, Ill.
Lifschutz, Jacob .....Beverly Hills, Calif.
Lloyd, Ralph Irving .....Brooklyn, N. Y.
Lowry, Blackburn W. .....Tampa, Fla.
McNichols, William A. .....Dixon, Ill.
Messier, A. Eugene .....Worcester, Mass.
Newton, Frank Hawley .....Dallas, Texas
Noonan, William James .....Chicago, Ill.
Payne, Richard Johnson .....St. Louis, Mo.
Richardson, Shaler Arnold ....Jacksonville, Fla.
Schlivek, Kaufman .....New York, N. Y.
Snell, Albert C. .....Rochester, N. Y.
Stark, Jesse B. .....New York, N. Y.
Whelan, George L. .....Philadelphia, Pa.

5. *Deaths Reported Since Last Council Meeting:*

Ashley, Thad W. .....Kenosha, Wis.
Baird, Charles G. .....Palo Alto, Calif.
Bauer, Charles E. .....Poughkeepsie, N. Y.
Behrens, Alvin .....Brooklyn, N. Y.
Benz, Alvin Hermann ....Ann Arbor, Mich.
Blaisdell, Irl Hazard .....Syracuse, N. Y.
Brown, Clayton M. .....Buffalo, N. Y.
Bulson, Eugene Loring ....Fort Wayne, Ind.
Cary, Edward H. .....Dallas, Texas
Chapman, Vernon Alaska ....Palm Springs, Calif.
Cowper, H. W. .....Buffalo, N. Y.
Daley, Jacob .....New York, N. Y.
Delph, John Francis ....Michigan City, Ind.
Dintenfass, Henry .....Philadelphia, Pa.
Douglas, Frederick Alexander, LaCrosse, Wis.*
Dowling, James Reginald ..Massillon, Ohio
Fitzgerald, William Weir ....Yonkers, N. Y.
Friedman, Paul Norton .....Baltimore, Md.
Garland, Frederick Eugene ....Boston, Mass.
Gregg, John B. .....Sioux Falls, S. D.
Hardy, LeGrand Haven ....New York, N. Y.
Haskin, William Henry ...Babson Park, Fla.
Heed, Charles R. .....Haverford, Pa.
Herzig, Arthur J. .....New York, N. Y.
Higgins, Samuel G. .....Milwaukee, Wis.
Hodge, James Vernon ....Kingsport, Tenn.
Johnson, H. R. .....Fairmont, W. Va.

Kesky, George Isaac .....Marquette, Mich.
Kilgore, George Lester ....San Diego, Calif.
King, Ossian Homer ....Hot Springs, Ark.
Kirby, Daniel Bartholomew, Pelham Manor, N. Y.
Kress, George Henry ....Los Angeles, Calif.
LaReau, Hector George .....Chicago, Ill.
Liva, Arcangelo .....Los Angeles, Calif.
Lyman, Harry W. .....St. Louis, Mo.
Markel, James Clyde .....Pittsburgh, Pa.
McFarlane, Donald Cecil ....London, Ont., Canada
McPherson, Samuel Dace ....Durham, N. C.
Mead, Ernest Charles ....Gainesville, Texas
Mills, Chester Rudolph .....Boston, Mass.
Minsky, Henry .....New York, N. Y.
Nesbit, Wellwood Mack .....Madison, Wis.
Palmer, Arthur .....New York, N. Y.
Prangen, Avery deH. .....Rochester, Minn.
Quincy, Josiah Edmund, West Roxbury, Mass.
Russell, James Andrew Merle ....Erie, Pa.
Smit, William Maurice .....St. Louis, Mo.
Smith, Robert Arvil .....New Castle, Ind.
Stanbery, Henry .....Cincinnati, Ohio
Stinson, William David ....Memphis, Tenn.
Strauss, Jerome Frank .....Chicago, Ill.
Steuber, Paul Jacob .....Lima, Ohio
Thorne, Fred Sanborn .....Boston, Mass.
Victor, Karl N. .....Louisville, Ky.
Waldapfel, Richard ....Grand Junction, Colo.
von Zelinski, Walter Frank ..Santa Barbara, Calif.

6. *Resignations Received*:

Breeding, Earle G. .....Washington, D. C.
Edgerton, Ambrose E. ..San Francisco, Calif.
Freedman, Abraham Orkin ..Montreal, Que., Canada
Gillespie, Elmer Hutchinson ....Clearwater, Fla.
Gilmore, Milton A. C. .....London, Ont., Canada
Guy, Loren Pritchard .....New York, N. Y.
Hands, Sidney Gillot .....Davenport, Iowa
Harris, Herman Lee .....Bristol, Va.
Hooss, Charles Henry Albert, St. Louis, Mo.
Jacobson, Seymour B. ....New York, N. Y.
Johns, Juanita Pearl .....Boston, Mass.
Joyce, William M. .....Middletown, Conn.
Nelson, Leo Arthur .....Dallas, Texas
Regan, William F. .....Boston, Mass.
Reimers, Robert S. .....Fort Madison, Iowa
Robert, Joseph X. ....Toronto, Ont., Canada
Saunders, Truman Laurance, Cincinnati, Ohio
Stone, Harry B. .....Roanoke, Va.
Verhoeff, Frederick Herman ..Boston, Mass.

7. *Requests for Inactive Status*:

Barton, John F. .....Longview, Wash.
Borgeson, Egbert John .....St. Paul, Minn.
Brook, Jeffrey J. .....Milwaukee, Wis.
Cleff, Oscar .....Chicago, Ill.
Coleman, Joseph Arvine ....New York, N. Y.
Donohoe, Edward Cyril .....Glendale, Calif.
Fink, Otto E. .....Kankakee, Ill.
Fischer, Nathaniel Arthur ....Pittsburgh, Pa.
Gibby, Harold James .....Worcester, Mass.
Goldberg, Sylvan S. ....Beverly Hills, Calif.
Goldthwaite, Ralph Harvard ..Santa Barbara, Calif.
Harner, Clyde Ernest .....Banning, Calif.
Henry, Loris L. .....Pasadena, Calif.
Hertz, William Jacob .....Allentown, Pa.
Karkeet, Robert Budd .....Portland, Ore.
Kelley, Isaac D., Jr. .....St. Louis, Mo.
Macpherson, Duncan .....New York, N. Y.
McCormack, Charles Goodsell ..Kensington, Md.
McDavitt, Bertha S. S., Fort Worth, Texas
McNay, Miller Ost ....St. Petersburg, Fla.
Miller, Isidore .....New York, N. Y.
Myers, E. Lee .....St. Louis, Mo.
Quiring, Walter O. .....Hutchinson, Kan.
Sidwell, Clarence Edward ..Longmont, Colo.
Smith, Alma Ceshner ....Chula Vista, Calif.
Smith, William Hamilton ..Hagerstown, Md.
Teal, Frederick Franklin .....Lincoln, Neb.
Troncoso, Manuel Uribe ...New York, N. Y.
Trull, Alfred Chase .....Haverhill, Mass.

8. Three Fellows were reported as delinquent in the payment of dues for a period of more than three years.

9. Subsequent to the deliberation of the Council on Wednesday, October 14, 1953, the Research and Finance Committee, authorized by the By-Laws (Article III, Section 1 (h)), further investigated the conditions stipulated in an AGREEMENT with Sturgis-Grant Productions, Inc., dated July 10, 1952, and on October 30 recommended to the Council: (1) That the agreement be considered as fulfilled with the completion of Part I, The Inner Ear, and the agreement terminated; (2) That the Secretary-Treasurer be authorized to execute an agreement with the aforesaid producers to complete the originally proposed motion picture project, Part II, The Embryology of the Human Ear (Nov. 5, 1951) on a cost plus basis with a guarantee on the part of the producers that the total cost to the Academy for completion of the film will

not exceed $40,000.00. By mail vote the Council voted unanimously to accept the recommendation of the Committee, and the proposed agreement was duly executed by the Executive Secretary-Treasurer.

10. Upon instruction from the Council at its annual meeting, October 10, 1953, President Frederick C. Cordes, acting in conjunction with the executive officers of the American Ophthalmological Society and the Section on Ophthalmology of the American Medical Association, appointed Conrad Berens, chairman; S. Rodman Irvine and Harold G. Scheie to act as a committee to draw up a statement regarding the professional practices of ophthalmologists to be presented to the Council on Constitution and By-Laws of the American Medical Association for inclusion in the Principles of Medical Ethics. Receipt of this report was acknowledged by Dr. L. A. Buie, chairman of the A.M.A. Council on Constitution and By-Laws. I recommend that the committee be dismissed.

11. Upon instruction from the Council at its annual meeting, October 14, 1953, President Frederick C. Cordes appointed Dr. Conrad Berens, chairman; Dr. Hayward Post and Dr. A. D. Ruedemann as a committee to study the proposal of Dr. James H. Allen that the Academy appoint an official representative to the newly formed Associated Agency for Research in the Prevention of Blindness and Rehabilitation of the Blind (now known as the National Committee for Research in Eye Diseases and Disabilities); that the Academy appropriate $500 toward the support of the new Agency; and that the public relations facilities of the Academy and the Academy's Committee on Research cooperate with the new Agency. The Committee's report will be considered under "Old Business."

12. On December 28, 1953, by order of the President, Dr. Frederick Cordes, Dr. Claude S. Perry of Columbus, Ohio, was appointed as a delegate of the Academy to the Vienna Ophthalmological Congress at its fiftieth anniversary meeting.

13. On February 3, 1954, President Walter Theobald appointed Dr. LeRoy A. Schall to represent the Academy at the Third Latin-American Congress of Otorhinolaryngology, which was held in Caracas, Venezuela, on February 21, 1954.

14. On February 17, Dr. Frank Costenbader, Secretary of the American Orthoptic Council, informed the Secretary that Dr. Kenneth Swan, who was appointed to serve on the Orthoptic Council for a term of three years, from January 1954 to January 1957, asked to be relieved of this assignment because of the press of other duties. Dr. Costenbader requested the appointment of Dr. Philip Knapp to represent the Academy for the above term. Acting on behalf of the Executive Committee, I authorized the appointment of Dr. Knapp to fill the unexpired term of Dr. Kenneth Swan.

15. On April 5, 1954, in response to a request from Vice Admiral J. T. Boone, Chief Medical Director of the Veterans Administration, Dr. Shaler Richardson of Jacksonville, Florida; Dr. Virgil G. Casten of Boston, Massachusetts, and Dr. John E. L. Keyes of Cleveland, Ohio, were nominated for consideration by the Executive Committee of the Special Medical Advisory Group in filling a vacancy due to the completion of the period of service of Dr. Derrick T. Vail, representing the specialty of Ophthalmology.

[Dr. Vail reported that Dr. David Harrington had been appointed to succeed him.]

Dr. Dunnington moved that the report of the Exective Secretary be accepted as read. The motion was seconded by Dr. LeJeune and carried.

II

The Treasurer, Dr. Benedict, submitted the audit for 1953, made by Byers, Wobschall & Miller, Certified Public Accountants, and the financial status of the Academy as of August 31, 1954. (*The audit for* 1953 *appeared in the May-June* 1954 *issue of the* TRANSACTIONS. *The financial status of the Academy as of August* 31, 1954, *is published herewith.*)

EXHIBIT "A"

AMERICAN ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

Balance Sheet as of August 31, 1954

ASSETS

Current Assets:			
Cash on hand		$ 25.00	
Cash in banks:			
First National Bank of Rochester		24,097.34	
First National Bank of Minneapolis		3,364.93	
Bank of Montreal		2,628.73	
Checks held for collection		78.00	
Membership dues receivable, delinquent		582.00	
Accounts receivable, others		814.95	
Inventory: Abstracts, manuals, monographs, films, etc.		16,647.97	
Total current assets			$ 48,238.92
Investments:			
Educational fund	$189,630.21		
Wherry Memorial Lecture fund	4,600.00	$194,230.21	
Plus: Advance in market values as of Dec. 31, 1953		8,146.04	202,376.25
Fixed Assets:			
Furniture and fixtures	$ 11,344.87		
Less: Reserve for depreciation	6,115.44	$ 5,229.43	
Embryology of Eye motion picture film & slides	$ 40,900.00		
Less: Reserve for depreciation	18,660.00	22,240.00	27,469.43
Deferred Charges:			
Prepaid expenses		$ 510.00	
Prepaid insurance		708.42	
Prepaid postage		120.32	
Embryology of the human ear motion picture		89,535.01	
Atlas of Otolaryngic Pathology		20,000.00	110,873.75
Total Assets			$388,958.35

LIABILITIES AND NET WORTH

Current Liabilities:			
Accrued withholding tax		$ 629.70	
Deferred income:			
Membership dues		213.00	
Advance payments		2,701.00	
Suspense account		183.99	$ 3,727.69
Undisbursed Funds from Special Contributions:			
Wherry Memorial Lecture fund			5,400.22
Net Worth			
Surplus—January 1, 1954		$290,065.00	
Excess income over expenses—Year to date		89,765.44	379,830.44
Total Liabilities and Net Worth			$388,958.35

EXHIBIT "B"

AMERICAN ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
Statement of Income and Expenses
For the Month Ending August 31, 1954, and Year to Date

	August 1954	1/1/54 to 8/31/54
Revenues:		
Membership dues	$ 253.00	$ 63,627.00
Membership application fees	522.00	3,780.00
Abstracts, manuals and monographs	639.25	2,905.10
Certificates		131.50
Embryology of the Eye film	225.00	1,475.00
Embryology of the Eye filmstrips & slides	25.00	450.00
Hearing guides		250.00
Standardization of tonometers	127.00	933.00
Other income	325.00	1,048.40
Profit on securities sold		993.75
Royalties		1,531.80
Convention	17,221.50	66,572.00
Home Study	4,300.00	6,090.00
Transactions	4,048.18	55,409.90
Educational fund:		
Interest		2,942.50
Dividends	45.00	1,343.22
Total Revenues	$27,730.93	$209,483.17
Operating Expenses:		
General and administrative	$ 6,293.92	$ 47,820.95
Convention and meetings	514.73	8,652.33
Home Study	1,186.95	5,935.30
Transactions	10,573.49	54,589.15
Educational Fund	340.00	2,720.00
Total Operating Expenses	$18,909.09	$119,717.73
Excess Income Over Expenses	$ 8,821.84	$ 89,765.44

American Academy of Ophthalmology and Otolaryngology
Securities Owned as of August 31, 1954

EDUCATIONAL FUND

Bonds	Rate %	Maturity	Par Value	Cost
Citizens Building Co. of Cleveland, 1st Leasehold Sinking Fund	6	1/ 1/46	$ 5,000.00	$ 5,000.00
Van Sweringen Co., Certificates of Indebtedness	6	12/31/48	6,000.00	3,477.03
Dominion of Canada—Series P5	3	10/ 1/63	5,000.00	5,112.50
Dominion of Canada—Series P5	3	10/ 1/63	2,500.00	2,500.00
Dominion of Canada—Series P7	3	9/ 1/66	2,000.00	1,880.00
U.S. Savings Bonds—Series F	—	12/ 1/55	13,500.00	9,990.00
U.S. Savings Bonds—Series G	2½	3/ 1/56	6,000.00	6,000.00
U.S. Savings Bonds—Series G	2½	5/ 1/56	2,000.00	2,000.00
U.S. Savings Bonds—Series G	2½	11/ 1/56	25,000.00	25,000.00
U.S. Savings Bonds—Series G	2½	7/ 1/58	30,000.00	30,000.00
U.S. Savings Bonds—Series G	2½	12/ 1/58	25,000.00	25,000.00
U.S. Savings Bonds—Series G	2½	3/ 1/59	15,000.00	15,000.00
U.S. Savings Bonds—Series G	2½	7/ 1/60	30,000.00	30,000.00
Total Bonds				$160,959.53

Stocks	Kind	Par Value	Shares	Cost
Citizens Bldg. Co., Cleveland	Shares	No Par	50	$ None
Commonwealth Edison Co.	Common	$25.00	100	2,619.00
E. I. DuPont De Nemours & Co.	Common	5.00	60	2,347.31
Louisville Gas & Electric Co.	5% Prefer.	25.00	200	5,450.00
Massachusetts Investors Trust	Trust Cert.	1.00	1,251	18,254.37
Ophthalmic Publishing Co.	Capital	20.00	5	None
Total Stocks				$ 28,670.68
Total Educational Fund (A) ..				$189,630.21

WHERRY MEMORIAL FUND

	Rate %	Maturity	Par Value	Cost
U.S. Savings Bonds—Series G (B)	2½	1955	$ 4,600.00	$ 4,600.00
TOTAL SECURITIES				$194,230.21

(A) Held for safekeeping by Trust Dept., First National Bank, Minneapolis, Minn.
(B) Held by Dr. W. L. Benedict, Executive Secretary-Treasurer, Rochester, Minn.

Dr. Cordes moved that the report of the Treasurer be accepted as read. Dr. Adler seconded the motion, which carried.

III

The report of the TRANSACTIONS was read by Dr. Benedict, Editor-in-Chief, as follows:

For the period September 1, 1953, through July 31, 1954.

During the year just past, an average of 7,108 copies of the TRANSACTIONS were printed bimonthly. Of these, 625 were set aside for bound volumes, and an average of 6,460 were mailed, an increase in circulation of 337 over last year. The following categories are represented:

Fellows	5,654
Candidates	137
Subscribers	385
Libraries	110
Exchange and Miscellaneous	54
Advertisers and Agents	56
Complimentary	25
Single copies	39

Five hundred and thirty-seven orders for the 1954 bound volume have been received to date.

The *revenue* from the TRANSACTIONS was as follows:

Fellowship dues	$36,112.00
Candidates' fees	1,642.00
Subscribers (nonmembers)	3,892.88
Bound Volumes	2,998.00
Single issues sold	129.00
Reprints	1,738.05
Advertising	13,260.64
Cuts	114.00
Directory	25.00
American Orthoptic Journal	260.00
Total	$60,171.57

The *expenditures* for the TRANSACTIONS were as follows:

Printing bimonthly issues	$31,710.01
Binding Bound Volumes	1,586.50
Postage	1,555.89
Freight and express	90.85
Reprints	3,084.01
Directory	4,053.55
Salaries	10,975.00
Supplies (stock and envelopes)	10,225.57
General expense	28.00
Cash discounts allowed	246.49
Total	$63,555.87
Excess expenses over income	$ 3,384.30

The past six issues have averaged 184 pages per issue, including news notes, directory of societies, committee reports, positions available, and miscellaneous notices. The list of approved hearing aids and the Directory of Ophthalmologic and Otolaryngologic Societies are now printed only twice a year, in the May-June and the November-December issues.

The average number of pages of paid advertising was 25.4, representing 35 advertisers.

The fourth volume of the *American Orthoptic Journal* (Dr. Hermann Burian, editor) was released in June. It contains 84 pages, including nine articles, editorials, abstracts, and a roster of members of the American Association of Orthoptic Technicians.

The Decennial Report of the Committee on Standardization of Tonometers, containing 177 pages of highly technical material, was edited and proofread in the Transactions office during the past year. It was published in July 1954 and a copy mailed to each member of the Academy and to all medical libraries on our subscription list.

The manual by Richard G. Scobee, "Disturbances of Ocular Motility," and Rucker's manual, "The Interpretation of Visual Fields," have been reprinted. "Cataract Types" by Fred Cordes, "Extrinsic Eye Muscles" by H. Saul Sugar, "Outline of Neuro-ophthalmology" by P. J. Leinfelder, and "Slit Lamp Biomicroscopy" by Goar et al, have been extensively revised and have either been published or will appear shortly.

The Directory was published in May, with all names and addresses corrected to February 1.

Dr. Vail moved that the report of the Editor-in-Chief be accepted as read. The motion was seconded by Dr. Walsh, and carried.

IV

Old Business

1. In connection with the Editor's Report, a question was raised regarding the mailing list for publications devoted entirely to ophthalmology or to otolaryngology—whether it should include the entire Academy roster. After considerable discussion it was decided that approximately 65 per cent of the Academy membership were practicing ophthalmology and otolaryngology jointly and that no saving would accrue from questionnaires or other efforts to classify the names on the roster according to the specialty practiced.

2. *The Decennial Report of the Committee on the Standardization of Tonometers.* Dr. Benedict reported that the publication of the

above report as authorized by the Council had been completed and that one copy had been mailed to each member of the Academy and to all medical libraries on the subscription list of the TRANSACTIONS. The cost of printing was $6,031.48. Dr. Benedict read a communication from Dr. Friedenwald, stating that he did not consider the quality of the paper and the type of binding adequate for a reference work, and requesting that an additional 500 copies be printed on heavier paper and bound in board covers. An estimate of $1,000 for 500 copies has been made by the Douglas Printing Company.

Dr. Adler pointed out that the report would be of lasting value and that there would be a constant demand from residents and doctors still in training. The paper-bound volumes have such small margins that it would be impossible to rebind them.

It was the consensus that 500 copies would not be adequate to take care of the present demand and the prospective demand over the next ten years.

Dr. Vail made a motion that the Council approve the request of Dr. Friedenwald, but that the number be increased to 1,000. Dr. Hansen seconded the motion, which carried.

3. The Publication of Manuals. The publication of new manuals and the revision of manuals already published were discussed. Dr. Benedict reported on the enthusiastic reception accorded the manuals and their increasing importance in the educational program of the Academy.

Particular attention was called to the manual by Dr. Scobee, deceased, which is now in its second printing. It was felt that the manual needed revision, and it was finally decided that it would be better to have a manual produced by a group in order to avoid a personal bias. Dr. Adler agreed to broach the matter to the group which was formed to arrange the Strabismus Symposium in 1952, which has continued to meet for discussion. It was the feeling of the Council that such a group might be subsidized in order to develop a comprehensive manual.

Dr. Dunnington moved that the chair be empowered to appoint a committee of three ophthalmologists and three otolaryngologists, including secretaries of the Academy, to study the problem of stimulating the production of more manuals and to determine the adequacy of manuals submitted. The motion was seconded by Dr. Boies, and carried.

Wednesday, September 22: Dr. Adler reported that the Strabismus Group was ready to go ahead with the preparation of a manual on ocular motility if they had the assurance of the Academy Council that there would be no conflicts with the Sugar manual.

Dr. Snydacker said that if it was the will of the Council, he and Dr. Newell might form a group similar to the Strabismus Group (Swan et al) to revise their manual or write one to replace it.

Dr. Benedict said that he felt what was needed was a small steering committee, a nucleus for the two committees originally suggested, to work for several months quite closely with the Board of Secretaries in studying the present manuals in the light of changes to be made and new manuals to be encouraged. He suggested that we need manuals on allergy and bacteriology. He recommended that thought be given to this problem, and that it be brought up for discussion again at the Program Committee meeting in January. He asked for authorization from the Council to pay the necessary expenses of committee meetings. Dr. Walsh moved that such authorization be granted. The motion was seconded by Dr. Adler and carried.

4. Dr. Ruedemann read the report of the Committee appointed to study the proposals of Dr. James Allen on behalf of the National Committee for Research in Eye Diseases and Disabilities.

Dr. Vail was asked to clarify the purposes of the National Committee and its organization. As a result of his explanation, the Committee agreed to reconsider its recommendations and to revise its report. The revised report was submitted at the afternoon session. This report recommended that $500 be appropriated for the Committee for one year beginning January 1, 1955, and that a delegate be appointed to represent the Academy on a reorganized Committee. Dr. Vail moved that the report be accepted and the recommendations referred to the Executive, Research and Finance Committee, and that the investigating committee be retained until the affiliating societies were ready to recommend its dismissal. The motion was seconded by Dr. Hansen and carried.

REPORT OF COMMITTEE ON THE NATIONAL COMMITTEE FOR RESEARCH IN EYE DISEASES AND DISABILITIES

Application for an appropriation for the National Committee for Research in Eye Dis-

cases and the appointing of a member to said Committee.

In accordance with a request of the members of a committee for funds to facilitate the general problems of research, both financial and advisory, it is proposed:

That this committee be thanked for its services. The members were Dr. James Allen, Dr. Lorand Johnson, Dr. Everett Kinsey.

That an appropriation of five hundred dollars ($500.00) be made for one year and be reconsidered for the next year.

That a delegate to the National Committee be appointed by the Council.

That full support of the committee be accorded by the American Academy of Ophthalmology and Otolaryngology.

Respectfully submitted,
A. D. Ruedemann
M. Hayward Post
Conrad Berens, Chairman

5. Dr. Lierle reported that on September 17 the Academy film on Embryology of the Ear had been previewed by about fifty otolaryngologists, including Dr. Philip Meltzer, Dr. Gordon Hoople, Dr. William McNally and Dr. Walter Theobald. The consensus was that it was a beautiful piece of work. He said that a great deal of research had been done on problems that had never been solved before and that everyone agreed that it was a wonderful film. He had one or two minor criticisms: (1) that too little time was given to read some of the legends; (2) that arrows pointing to parts were sometimes too large and hid parts that should be shown. Dr. Lierle estimated that the running time would be increased to nearly two hours if the time given to legends was lengthened.

Dr. Robb said he felt that this was the greatest teaching film ever produced.

Dr. Theobald remarked that it had the impact of a great symphony, a magnificent assembling of scientific work.

Dr. Lierle suggested that Dr. McNally be asked to compile an atlas of still shots from the film. The great value would be to have still pictures or an atlas for study in connection with the film.

Dr. Benedict asked Dr. Lierle if he would go so far as to designate a committee to prepare a list of references. Dr. Lierle said he felt that Dr. McNally should be chairman of such a committee, if set up by the Council. Dr. Benedict said that this material would deteriorate with time so work should begin within the next few months. He asked for authorization from the Council. Dr. Lierle moved that $500 be appropriated for the making of slides and stills for teaching purposes. The motion was seconded by Dr. Robb and passed.

V

Communications

1. On November 17, 1953, a letter was received from Dr. Paul Holinger, Interim Secretary of the Sixth International Congress of Otolaryngology, in which he asked that the Academy send representatives to an organizational meeting on January 9, 1954. Such representatives were present at the meeting.

2. On February 23, 1954, Dr. Robert O. Sherwood, a member of the Academy from San Mateo, California, petitioned the Council to consider changing the annual meeting time from October to perhaps in May. He felt that if the far western membership were canvassed, many members would have these same feelings.

3. Under date of October 27, 1953, Mr. Leopold Rovner of Optionic Research, Inc., wrote on the advise of Dr. Charles Schepens, Director of the Retina Foundation in Boston, regarding the development of practical retinoscopy equipment "that will enable a medical consultative group simultaneously to view an enlarged image of the living human retina on a television type screen." He hoped, in due course, to negotiate a research and development contract with the Academy to produce such an apparatus and make studies with it, with Dr. Schepens and Dr. Fritz Wachendorf as consultants. I wrote Mr. Rovner that "This type of support does not come within the category of the contributions to ophthalmic science for which Academy support is authorized." I told him, however, that the Council was open to suggestions, and that I should be glad to present to it any further particulars he might care to transmit. I have heard no more from him.

4. On March 3, 1954, Dr. Edwin L. Crosby, Director of the Joint Commission on Accreditation of Hospitals, wrote directing the attention of the Academy to statements regarding consultations in the December 1953 Bulletin of the Commission.

> "Except in emergency, consultation with a member of the Consulting or of the Active medical staff shall be required in all major cases in which the patient is not a good risk, or in which the diagnosis is ob-

secure, and in all first caesarean sections, sterilizations, curettages or other operations which may interrupt a known, suspected, or possible pregnancy. The consultant shall make and sign a record of his findings and recommendations in every such case. In all cases where a rule of the hospital requires consultation, the consultant may, and in the case of free patients shall, give his services without charge. This Standard is applicable to all members of the medical staff."

The Board asked the Committee on Consultations to continue its study and report back after July 1, 1954. The Committee would appreciate comments or suggestions from any interested individual or group as to the Standard on Consultations as stated in this Bulletin.

This request was referred to Dr. John Dunnington, Chairman of the Board of Councillors. On his advice, I wrote to Dr. Crosby that the American Academy of Ophthalmology and Otolaryngology is glad to cooperate with the Commission in this study.

5. On August 5 a letter was received from Professor J. Francois of Ghent, Belgium, asking if it would be possible for him to become a member of the Academy. He was informed that honorary membership was the only classification possible and that his request would be referred to the Council. Dr. Benedict talked with Dr. Francois, and he is anxious to become an Active Fellow. Dr. Benedict said that he felt Dr. Francois' qualifications were comparable to those of a diplomate of the American Boards, and recommended him to the Council for Active Fellowship. The motion was seconded by Dr. Dunnington and carried.

7. Dr. Vail asked to present a verbal request for the support of the International Federation of Ophthalmological Societies by the Academy. He stated that the other three national ophthalmological societies had membership in the Federation, and that per capita support of the Federation was lower in the United States than in any other country. Upon the vote of the Council, the matter was referred to the Executive, Research and Finance Committee for consideration.

VI

Report of the Executive, Research and Finance Committee—Dr. Walter H. Theobald, Chairman.

1. The Committee recommends that the application fee shall continue to be $25.00, and that the annual dues for Junior Fellows shall be $20.00; for Senior Fellows, $10.00. The allotment from dues and from application fees for subscription to the TRANSACTIONS shall be continued at $7.00.

It was moved and seconded that these recommendations be approved. The motion carried.

2. The Committee recommends that the three Fellows who have been delinquent in the payment of dues for a period of more than three years be dropped from the Academy roster.

The Committee also recommends that the following resignations be accepted:

Breeding, Earle G., Washington, D. C.
Edgerton, Ambrose E., San Francisco, Calif.
Freedman, Abraham Orkin, Montreal, Que., Canada
Gillespie, Elmer Hutchinson, Clearwater, Fla.
Gilmore, Milton A. C., London, Ont., Canada
Guy, Loren Pritchard, New York, N. Y.
Hands, Gidney Gillot, Davenport, Iowa
Harris, Herman Lee, Bristol, Va.
Hooss, Charles Henry Albert, St. Louis, Mo.
Jacobson, Seymour B., New York, N. Y.
Johns, Juanita Pearl, Boston, Mass.
Joyce, William M., Middletown, Conn.
Nelson, Leo Arthur, Dallas, Texas
Regan, William F., Boston, Mass.
Reimers, Robert S., Fort Madison, Iowa
Robert, Joseph X., Toronto, Ont., Canada
Saunders, Truman Laurance, Cincinnati, Ohio
Stone, Harry B., Roanoke, Va.

The Committee declines to accept the resignation of Dr. Frederick Herman Verhoeff, and recommends that he be made an Honorary Fellow of the Academy.

A motion was made by Dr. Benedict, seconded by Dr. Dunnington, that these recommendations be accepted. The motion carried.

3. The Committee recommends that the following Fellows requesting reclassification be transferred to inactive status:

Barton, John F., Longview, Wash.
Borgeson, Egbert John, St. Paul, Minn.
Brook, Jeffrey J., Milwaukee, Wis.
Cleff, Oscar, Chicago, Ill.
Coleman, Joseph Arvine, New York, N. Y.
Donohoe, Edward Cyril, Glendale, Calif.
Fink, Otto E., Kankakee, Ill.
Fischer, Nathaniel Arthur, Pittsburgh, Pa.

Gibby, Harold James, Worcester, Mass.
Goldberg, Sylvan S., Beverly Hills, Calif.
Goldthwaite, Ralph Harvard, Santa Babara, Calif.
Harner, Clyde Ernest, Banning, Calif.
Henry, Loris L., Pasadena, Calif.
Hertz, William Jacob, Allentown, Pa.
Karkeet, Robert Budd, Portland, Ore.
Kelley, Isaac D., Jr., St. Louis, Mo.
Macpherson, Duncan, New York, N. Y.
McCormick, Charles Goodsell, Kensington, Md.
McDavitt, Bertha S. S., Fort Worth, Texas
McNay, Miller Ost, St. Petersburg, Fla.
Miller, Isidore, New York, N. Y.
Myers, E. Lee, St. Louis, Mo.
Quiring, Walter O., Hutchinson, Kan.
Sidwell, Clarence Edward, Longmont, Colo.
Smith, Alma Ceshner, Chula Vista, Calif.
Smith, William Hamilton, Hagerstown, Md.
Teal, Frederick Franklin, Lincoln, Neb.
Troncoso, Manuel Uribe, New York, N. Y.
Trull, Alfred Chase, Haverhill, Mass.

A motion to accept this recommendation was made by Dr. Benedict, seconded by Dr. Hansen, and carried.

4. The Committee recommends the following appointments to Standing and Joint Committees:

To the Armed Forces Committee, Dr. M. Elliott Randolph, chairman

To the Committee on Conservation of Hearing, Dr. Dean M. Lierle, chairman

To the Committee on Ophthalmic Pathology, Dr. Michael J. Hogan, chairman

To the Committee on Otolaryngic Pathology, Dr. Paul H. Holinger, chairman

To the Committee on Pan-American Relations in Ophthalmology, Dr. Conrad Berens, chairman

To the Committee on Pan-American Relations in Otolaryngology, Dr. C. L. Jackson, chairman; Dr. Victor R. Alfaro, Dr. Norton Canfield, Dr. John Marquis Converse, Dr. Jose Conrad Gros, Dr. Paul H. Holinger, Dr. Howard P. House, Dr. Carlos Munoz-MacCormick, Dr. William J. McNally, Dr. LeRoy A. Schall, Dr. Theodore E. Walsh.

To the Committee on Plastic and Reconstructive Surgery, Dr. John Marquis Converse and Dr. Wendell L. Hughes, co-chairmen

To the Committee on Prevention of Blindness, Dr. Ralph I. Lloyd, chairman

To the Committee on Scientific Exhibit, Dr. Kenneth L. Roper and Dr. Eugene L. Derlacki, co-chairmen

To the Committee on Standardization of Tonometers, Dr. Peter C. Kronfeld, chairman

To the Committee on the Study of Audio-Visual Instruction, Dr. Dean M. Lierle, chairman; Dr. William L. Benedict, ex officio; Dr. Lawrence R. Boies, Dr. Kenneth L. Roper, Dr. A. D. Ruedemann, Sr.

To the Teachers' Section: Otolaryngology, Dr. Gordon D. Hoople, chairman

To the Teachers' Section: Ophthalmology, Dr. A. D. Ruedemann, Sr., chairman

To the American Association for the Advancement of Science, Dr. M. Elliott Randolph, representative

To the American Board of Ophthalmology, Dr. F. Bruce Fralick for a four-year term beginning January 1, 1955

To the American Board of Otolaryngology, Dr. Francis E. LeJeune and Dr. Gordon F. Harkness

To the American College of Surgeons Board of Governors, Dr. Walter S. Atkinson, Dr. Francis H. Adler, Dr. John H. Dunnington, nominees for term ending in 1958; one to be selected by the Board of Trustees of the College

To the American Committee on Optics and Visual Physiology, Dr. Kenneth Swan, for a term of three years beginning January 1, 1955

To the American Orthoptic Council, Dr. John W. Henderson of Ann Arbor, for a term of three years beginning January 1, 1955

To the Joint Committee on Industrial Ophthalmology, Dr. Edmund B. Spaeth, Dr. John B. Hitz, Col. Victor A. Byrnes

To the National Society for Crippled Children and Adults, Inc., Dr. Dean M. Lierle

It was moved and seconded that these appointments be approved. The motion carried.

5. The Committee recommends the nomination of Dr. William L. Benedict as Editor-in-Chief of the TRANSACTIONS.

A motion to approve the recommendation was seconded and carried.

6. The Committee recommends that the next annual meeting of the Academy be held October 9-14, 1955, at the Palmer House, Chicago.

The recommendation was approved by Council vote.

7. The Committee recommends the following appropriations for the calendar year 1955:

To the Committee on Conservation of Hearing, a sum not to exceed $12,000. Of this appropriation, $5,000 will be earmarked for the Subcommittee on Noise in Industry, and the remainder will be allocated by the parent

Committee. Dr. Douglas Wheeler's salary will no longer be paid by the Academy. All moneys remaining in the appropriation at the close of 1955 will revert to the Academy treasury.

The recommendation was approved by Council vote.

To the Committee on Standardization of Tonometers, $1,000. An additional $2,000 appropriation is recommended for the publication of 1,000 copies of the Decennial Report of the Committee on Standardization of Tonometers in board covers.

The recommendation was approved by Council vote.

To the American Committee on Optics and Visual Physiology, $150.

The recommendation was approved by Council vote.

To the American Orthoptic Council, $100.

The recommendation was approved by Council vote.

To the National Society for Medical Research, $1,000, if requested.

The recommendation was approved by Council vote.

To the National Committee for Research in Eye Diseases and Disabilities, $500. It was further recommended that the Academy delegate Dr. Alan Woods to serve as its representative on the Committee.

The recommendations were approved by Council vote.

To the International Federation of Ophthalmological Societies, an appropriation not to exceed $300 to be granted at the discretion of the Executive Secretary-Treasurer. It was further recommended that Dr. William L. Benedict be delegated to serve as Academy representative.

The recommendations were approved by unanimous Council vote.

Dr. Dunnington made a motion, seconded by Dr. Roper, that the report of the Executive, Research and Finance Committee be accepted by the Council in its entirety. The motion carried.

VII

Report of the Activities Committee—Dr. John H. Dunnington, chairman.

Reports of the following committees were reviewed and approved by the Committee:

Armed Forces Committee
Committee on Conservation of Hearing
Committee on Otolaryngic Pathology
Committee on Prevention of Blindness
Committee on Standardization of Tonometers
Committee on the Study of Audio-Visual Instruction

Reports of representatives of the Academy to the following organizations were also reviewed and approved:

American Association for the Advancement of Science
American Board of Ophthalmology
American Board of Otolaryngology
American College of Surgeons Board of Governors
American Committee on Optics and Visual Physiology
American Orthoptic Council
Joint Committee on Industrial Ophthalmology

The Committee wishes to call the attention of the Council to items in the following reports:

Committee on Ophthalmic Pathology
Committee on Pan-American Relations in Ophthalmology
Committee on Scientific Exhibit

1. Committee on Ophthalmic Pathology. Publication of a list of eye pathology laboratories capable of and willing to process eyes for civilian ophthalmologists to be sponsored by the Academy in the TRANSACTIONS, the American Journal of Ophthalmology, and the A.M.A. Archives of Ophthalmology, the list to be furnished by the Committee.

This suggestion was approved by the Council.

2. Committee on Pan-American Relations in Ophthalmology. The Committee suggests that two or three courses in the fields of glaucoma and motility be presented in English at Academy meetings, and translated into Spanish or Portuguese. The original lecturer to attend the foreign-language session and enter into the discussion through an interpreter. It also recommends that one representative from each of the Latin American countries be invited to the Academy meeting annually, the invitations to be rotated among the ophthalmologists of each of the various nations.

Your Activities Committee recommends that the report of the Committee on Pan-American Relations in Ophthalmology be accepted. However, it cannot recommend that the requests of the committee be approved.

The Council voted to accept the recommendation of the Committee together with the reservations.

3. Committee on Scientific Exhibit. The Committee recommends the acceptance of this report with commendation, but wishes to call the attention of the Council to the paragraph regarding reimbursement of scientific exhibitors of charges by the Waldorf-Astoria Hotel for electric service.

The Council voted to accept the recommendation of the Committee and to leave the matter of reimbursement of exhibitors to the discretion of the Executive Secretary-Treasurer.

A motion was made by Dr. Roper, seconded by Dr. Hansen, that the entire report of the Committee be accepted. The motion carried.

VIII

Report of the Board of Councillors—Dr. John H. Dunnington, chairman

1. Nomination of officers:

President: Dr. Algernon B. Reese, New York
President-Elect: Dr. A. C. Furstenberg, Ann Arbor
First Vice-President: Dr. Philip E. Meltzer, Boston
Second Vice-President: Dr. William B. Clark, New Orleans
Third Vice-President: Dr. Howard P. House, Los Angeles
Councillor: Dr. Harold H. Joy, Syracuse, N. Y.
Executive Secretary-Treasurer: Dr. William L. Benedict, Rochester, Minn.

A motion was made by Dr. Dunnington that the nominations be approved. The motion was seconded by Dr. Vail, and carried.

2. The Board of Councillors recommends that 273 candidates who have fulfilled the requirements for membership be accepted for Fellowship in the Academy.

The Board further recommends that Fellowship in the Royal College of Surgeons of England be considered as fulfilling the requirements for Board certification in the case of Dr. Howard Reed of Winnipeg, Canada, and that he be accepted for fellowship in the Academy.

[Note: With the Council recommendation of Professor J. Francois of Ghent, Belgium, this makes a total of 275.]

A motion to accept these recommendations and the entire report of the Committee was made by Dr. Vail, seconded by Dr. Roper, and carried.

X

New Business

1. Dr. Benedict recommended that because of the duplication of effort, since the majority of Home Study Courses registrants are also residents in training, the privilege of guest registration for Home Study registrants be discontinued.

Dr. Vail moved that this custom be discontinued. The motion was seconded by Dr. Pischel and carried.

2. The printing of a list of candidates for distribution at the Business Meeting was discussed. The list varies very little from that printed in the TRANSACTIONS. It was the consensus that the list should be continued in order that it would not be necessary to read the names.

3. A letter of Dr. L. R. Teasdale of West Palm Beach, Florida, was presented by Dr. Lawrence Boies. Dr. Teasdale asked the Academy's policy regarding doing tonsillectomy and adenoidectomy operations in months during which poliomyelitis is prevalent. Dr. Lierle moved that Dr. Teasdale be informed that it was the opinion of the Council that this question should be settled at the local level and is not a problem for Academy action. The motion was seconded by Dr. Hansen and carried.

4. At a meeting of the Committee on Otolaryngic Pathology on Sunday, September 19, it was voted to recommend to the Academy Council that "provision be made for the registering and the processing of interesting temporal bones. . . . It is our opinion that the existence of facilities for processing of temporal bones in a central agency such as the Armed Forces Institute would tend to collect material from the widest possible sources and would provide the greatest services to the medical profession."

The otolaryngologists on the Council pointed out that everybody in Pathology wanted to keep his own temporal bones. Dr. Walsh said that many bones would be ruined before they were sent. They must be fixed at once, because they decalcify quickly. He suggested that editorials should be written giving instructions for preparing and shipping them. He commented that undertakers do not like to take them out.

Dr. Roberts suggested that Dr. Benedict discuss with Dr. Paul Holinger, chairman of the Committee, the publicity necessary to meet the request adequately.

Dr. Roper moved that the Executive Secretary be instructed to implement in every way possible the purposes of this request. The motion was seconded by Dr. Roberts and carried.

5. Dr. Benedict nominated the following Secretaries for 1955:

Secretary for Ophthalmology: Dr. Kenneth L. Roper

Secretary for Otolaryngology: Dr. Lawrence R. Boies

Secretary for Instruction in Ophthalmology: Dr. A. D. Ruedemann, Sr.

Secretary for Instruction in Otolaryngology and Maxillofacial Surgery: Dr. Dean M. Lierle

Secretary for Home Study Courses: Dr. Daniel Snydacker

Secretary for Public Relations: Dr. Erling W. Hansen

The motion to recommend the election of this slate was seconded by Dr. Cordes and carried.

6. Dr. Vail, Senior Member of the Council, spoke of the regret with which he ended his close association with the Council. He expressed his deep feeling for the Academy and his continuing interest in its aims.

7. Dr. Benedict read a telegram from Mrs. Perdita Wherry Carr. He spoke of the days when the Academy Council had been a closely knit group. He expressed regret that circumstances had made it necessary to curtail some of the informal gatherings of the Council this year, and hoped that the spirit that had always pervaded the Academy and the Council would never be lost.

Since there was no further business, the Council adjourned sine die.

ANNUAL BUSINESS MEETING

The business meeting of the Fifty-Ninth Annual Session of the American Academy of Ophthalmology and Otolaryngology convened at 5:45 p.m. in the Jansen Suite of the Waldorf-Astoria Hotel, New York, September 23, 1954, President Walter H. Theobald presiding.

Report of the Executive Secretary, Dr. William L. Benedict

Fellowship on August 31, 1954:

Junior Fellows	4,955
Senior Fellows	283
Life Fellows	417
Honorary Fellows	29
Inactive Fellows	55
Total	5,739

Candidates to be considered at this meeting	275
For elevation to Senior Fellowship on January 1, 1955	105
For elevation to Life Fellowship on January 1, 1955	31
Deaths reported since the last meeeting	56
Resignations accepted	17
Reclassified as Inactive Fellows	29
Dropped for nonpayment of dues	3

On motion of Dr. F. E. LeJeune, seconded by Dr. Sam E. Roberts, the report was accepted as read.

Report of the Treasurer, Dr. Benedict

The audit for 1953 made by Byers, Wobschall and Miller, Certified Public Accountants, was published in the May-June 1954 issue of the TRANSACTIONS. Supplementing that audit, the financial status of the Academy as of August 31, 1954, follows:

Total Current Assets	$ 48,238.92
Educational Fund	197,776.25
Wherry Memorial Fund	4,600.00
Fixed Assets	27,469.32
Deferred Charges	110,873.75
Total Assets	$388,958.35
Surplus, Jan. 1, 1954	$290,065.00
Current Liabilities	3,727.69
Undisbursed Funds	5,400.22
Excess Income over Expenses	89,765.44
Total Liabilities	$388,958.35

It was moved by Dr. Sam E. Roberts, seconded by Dr. Daniel Snydacker, that the report be accepted. The motion carried.

President Theobald: In the absence of Dr. Derrick Vail, the report of the Senior Member of the Council will be given by Dr. James Milton Robb.

Report of the Senior Member of the the Council:

Mr. President and Members of the Academy: The Council has received and approved the reports of the Secretary-Treasurer, the Editor of the TRANSACTIONS, the Council Committees, and joint and standing committees. These reports will be published in the November-December 1954 issue of the TRANSACTIONS.

The Council recommends that the application fee for fellowship in the Academy shall remain at $25; the annual dues for Junior Fellows at $20; for Senior Fellows at $10. I move the adoption of this recommendation.

The motion was seconded by Dr. Sam E. Roberts and carried.

The Council recommends the following appropriations for the year 1955:

To the Committee on Conservation of Hearing, a sum not to exceed $12,000. I move the adoption of this recommendation.

The motion was seconded by Dr. Francis E. LeJeune and carried.

To the Committee on Standardization of Tonometers, $1,000, plus an additional grant of $2,000 to cover publication costs.

To the American Committee on Optics and Visual Physiology, $150.

To the American Orthoptic Council, $100.

To the National Society for Medical Research, $1,000 if requested.

To the National Committee for Research in Eye Diseases and Disabilities, $500.

To the International Federation of Ophthalmological Societies, an appropriation not to exceed $300 to be granted at the discretion of the Executive Secretary-Treasurer.

I move the adoption of these recommendations.

The motion was seconded by Dr. Algernon B. Reese and carried.

The Council recommends the following appointments to standing and joint committees for the year 1955:

To the Armed Forces Committee, Dr. M. Elliott Randolph, Chairman.

To the Committee on Conservation of Hearing, Dr. Dean M. Lierle, Chairman.

To the Committee on Ophthalmic Pathology, Dr. Michael J. Hogan, Chairman.

To the Committee on Otolaryngic Pathology, Dr. Paul H. Holinger, Chairman.

To the Committee on Pan-American Relations in Ophthalmology—Dr. Conrad Berens, Chairman.

To the Committee on Pan-American Relations in Otolaryngology—Dr. C. L. Jackson, Chairman; Dr. Victor R. Alfaro, Dr. Norton Canfield, Dr. John Marquis Converse, Dr. Jose Conrad Gros, Dr. Paul H. Holinger, Dr. Howard P. House, Dr. Carlos Munoz-MacCormick, Dr. William J. McNally, Dr. LeRoy A. Schall, Dr. Theodore E. Walsh.

To the Committee on Plastic and Reconstructive Surgery, Dr. John Marquis Converse and Dr. Wendell L. Hughes, Co-Chairmen.

To the Committee on Prevention of Blindness, Dr. Ralph I. Lloyd, Chairman.

To the Committee on Scientific Exhibit, Dr. Kenneth L. Roper and Dr. Eugene L. Derlacki, Co-Chairmen.

To the Committee on Standardization of Tonometers, Dr. Peter C. Kronfeld, Chairman.

To the Committee on the Study of Audio-Visual Instruction, Dr. Dean M. Lierle, Chairman; Dr. W. L. Benedict, ex officio; Dr. Lawrence R. Boies, Dr. Kenneth L. Roper, Dr. A. D. Ruedemann, Sr.

To the Teachers' Section: Otolaryngology, Dr. Gordon D. Hoople, Chairman.

To the Teachers' Section: Ophthalmology, Dr. A. D. Ruedemann, Sr., Chairman.

Representatives to:

American Association for the Advancement of Science, Dr. M. Elliott Randolph.

American Board of Ophthalmology, Dr. F. Bruce Fralick, for a 4-year term beginning January 1, 1955.

American Board of Otolaryngology, Dr. Francis E. LeJeune and Dr. Gordon Harkness.

American College of Surgeons Board of Governors, Dr. Walter S. Atkinson, Dr. Francis H. Adler, Dr. John H. Dunnington, nominees (from whom one will be chosen to serve).

American Committee on Optics and Visual Physiology, Dr. Kenneth Swan re-elected for a term of three years beginning January 1, 1955.

American Orthoptic Council, Dr. John W. Henderson of Ann Arbor, Michigan, for a term of three years beginning January 1, 1955.

Joint Committee on Industrial Ophthalmology, Dr. Edmund B. Spaeth, Dr. John B. Hitz, Col. Victor A. Byrnes.

Joint Committee on Retrolental Fibroplasia, Dr. William C. Owens.

National Society for Crippled Children and Adults, Dr. Dean M. Lierle.

National Committee for Research in Eye Diseases and Disabilities, Dr. Alan Woods.

International Federation of Ophthalmological Societies, Dr. William L. Benedict.

I move the adoption of these recommendations.

The motion was seconded by Dr. Sam E. Roberts and carried.

The Council recommends that the President be empowered to appoint two committees, one of three ophthalmologists and one of three otolaryngologists, to study the policy of teachers' manuals of the Academy. I move the adoption of these recommendations.

The motion was seconded by Dr. Francis E. LeJeune and carried.

The Council recommends the appointment of Dr. William L. Benedict as Editor-in-Chief of the TRANSACTIONS. I move the adoption of this recommendation.

The motion was seconded by Dr. Algernon B. Reese and carried.

The Council nominates for Honorary Fellowship in the Academy, Dr. Frederick Herman Verhoeff of Brookline, Massachusetts. I move that we acept the nomination of the Council.

The motion was seconded by Dr. Algernon B. Reese and carried.

The Council nominates for Active Fellowship the 275 candidates whose names appear on the sheet handed you as you entered the room. I move that we accept the nominations of the Council.

The motion was seconded by Dr. Francis E. LeJeune and carried.

Newly Elected Fellows of the Academy:

Adam, Stewart Inglis, 2701 Far Hills Ave., Dayton 9, Ohio, ALR

Addington, Charles H., 675 Delaware Ave., Buffalo 2, N. Y., OP

Adler, Hyman Henry, 134 Middle Neck Rd., Great Neck, N. Y., ALR

Albaugh, Kathryn Louise, 727 W. Seventh St., Los Angeles 17, Calif., OP

Alexander, Stephen John, 229 E. Main St., Crawfordsville, Ind., OP

Alo, Joseph, 2615 Grand Concourse, New York 68, N. Y., ALR

Amstutz, Hubert M., 110 E. Main St., Lancaster, Ohio, ALR

Armstrong, Hiram Edward, 1114 N. Second St., Harrisburg, Pa., ALR

Arnoux, Mourad Naef, 104 Bergen St., Brooklyn 1, N. Y., ALR

Arteaga, Oliver, 152 Forrest Ave., Atlanta, Ga., OP

Atkinson, Robert Henry, Suite 205, Medical Arts Bldg., Hot Springs, Ark., ALR

Atkinson, Thomas Ernest, Jr. (Lt. Comdr.), U. S. Naval Hospital, Pensacola, Fla., OP

Bailey, Howard Ashley, Jr., 608 Donaghey Bldg., Little Rock, Ark., ALR

Baltzell, William Hewson, 2 E. Chestnut Hill Ave., Philadelphia 18, Pa., ALR

Barney, Bernard B., 217 S. Union St., Burlington, Vt., ALR

Barranco, Anthony Joseph, 111 E. 61st St., New York 21, N. Y., OP

Barton, Lewis W., 180 Washington Ave., Albany, N. Y., ALR

Baum, Seymour James, 2199 S. Park Ave., Bridgeport, Conn.

Baxter, James Douglas, 1509 Sherbrooke St. West, Montreal, Que., Canada, ALR

Becker, Bernard, 640 S. Kingshighway Blvd., St. Louis 10, Mo., OP

Belmont, Owen, 2731 N. Fifth St., Philadelphia 33, Pa., OP

Berlove, Ira Jay, 944 Park Ave., New York 28, N. Y., ALR

Berman, Walter Elliott, 11467 Thurston Circle, Los Angeles 49, Calif., ALR

Berry, Robert Zinn, 211 Medical Arts Bldg., Baltimore 1, Md., ALR

Bierman, Edward Otto, 5885 San Vicente Blvd., Los Angeles 19, Calif., OP

Blair, Edwin, 441 Ocean Ave., Brooklyn 26, N. Y., OP

Blazar, Howard A., 520 Beacon St., Boston 15, Mass., OP

Blood, Horace S., 5 S. State St., Concord, N. H., ALR

Boice, Robert Roland, 113 S. Kentucky Ave., Roswell, N. M., ALR

Bonadia, Calogero, 1822 70th St., Brooklyn 4, N. Y., OP

Bono, John, 125 N. McKean St., Kittanning, Pa., ALR

Boozan, Charles W., 33 DeWitt Rd., Elizabeth 3, N. J., OP

Brackett, J. Gordon, 1019 Doctors Bldg., Atlanta 3, Ga., ALR

Bradburn, Ian Muir, 1004 Torrey Pines Rd., La Jolla, Calif., ALR

Brannon, Wade Hampton, 614 Commercial Bank Bldg., Anniston, Ala., ALR

Brockman, Seymour Joseph, 2007 Wilshire Blvd., Los Angeles 57, Calif., ALR

Brodhead, Richard H., 502 Third St., Wausau, Wis., ALR

Buckley, Eugene Thomas, 131 Fulton Ave., Hempstead, L. I., N. Y., OP

Burstein, Frank, 1115 S. Broad St., Newark 5, N. J., OP

Caccamise, William Charles, 76 S. Fitzhugh St., Rochester 8, N. Y., OP

Campbell, Bernard Edward, 526 Republic Bldg., Denver 2, Colo., OP

Campbell, Jack Swope, 611 Michigan Nat'l Bank Bldg., Battle Creek, Mich., ALR
Caparas, Edgardo Tengco, Moncada, Tarlac, Phillipines, OP
Carson, Willis Thomas, 1200-D N. Texas Ave., Odessa, Texas, OP
Carter, Norman Kinman, 520 W. 17th St., Santa Ana, Calif., ALR
Cerrato, Calvin M., 45 Bay State Rd., Boston 15, Mass., ALR
Chalat, Ned Ira, Parks AFB Hospital, Pleasanton, Calif., ALR
Chisholm, Gavin, 1207 Douglas St., Victoria, B. C., Canada. ALR
Ciell, August Paul, U. S. Naval Hospital, St. Albans, N. Y., ALR
Clarke, Kenneth Andrew Connal, 10026 102nd St., Edmonton, Alta., Canada, ALR
Cluskey, Donald James, Marine Corps Recruit Depot, San Diego 40, Calif., OP
Cocke, Edwin Wesley, Jr., 899 Madison Ave., Memphis, Tenn., ALR
Cohen, Frank L., 2113 Spruce St., Philadelphia 3, Pa., OP
Cohen, Lawrence Louis (1st Lt.), Davis-Monthan AFB, Tucson, Ariz., ALR
Cole, James Monroe Lt. (MC), U. S. Naval Hospital, San Diego, Calif., ALR
Consentino, Joseph S., 225 E. 47th St., New York 17, N. Y., ALR
Cook, Norman Corrigan, 1029 Douglas St., Victoria, B. C., Canada, ALR
Couch, Ray Edwards, P. O. Box 1059, Port Arthur, Texas, ALR
Cowan, Claude Lee, 1939 13th St. N.W., Washington 9, D. C., OP
Cowin, Carl C., 6381 Hollywood Blvd., Los Angeles 28, Calif., ALR
Cox, Lawson Glynn, Major (MC) 063784, 130th Station Hospital, APO 403, New York, N. Y., ALR
Crossen, Robert John, 902 David Whitney Bldg., Detroit 26, Mich., OP
Culver, James Fox, 135 Monte Vista Ave., Watsonville, Calif., OP

Dalton, John Thomas, 67 Coddington St., Quincy 69, Mass., OP
Dane, Walter Henry, Veterans Administration Hospital, Albuquerque 2, N. M., ALR
Dasler, Theodore Walter, 625 N. Milwaukee St., Milwaukee 2, Wis., OP
Davidson, Bernard, 14435 Hamlin St., Van Nuys, Calif., OP
Deininger, James V., 1348 Market St., Redding, Calif., ALR
de Roetth, Andrew, Jr., 635 W. 165th St., New York 32, N. Y., OP
Diamond, Howard P., 120 Central Park South, New York 19, N. Y., ALR
Dolphin, Joseph Murray, 83 S. Franklin St., Wilkes Barre, Pa., OP
Donin, Jerry Frank, 218 Medical Arts Bldg., Winnipeg, Man., Canada, OP
Drake, Henry Patrick, 316 Michigan St., Toledo 2, Ohio, OP
Driver, Leslie Rowe, Jr., 340 Doctors Bldg., Nashville 3, Tenn., OP
Duff, Robert Lewis, Veterans Administration Hospital, McKinney, Texas, ALR
Duncan, Hugh A. G., 1390 Sherbrooke St. West, Montreal, Que., Canada, OP
Dwyer, Frank P., Jr., Latrobe Bldg., Charles & Reed Sts., Baltimore 2, Md., ALR

Eaddy, Norman Olin, 201 N. Washington St., Sumter, S. C., OP
Eastham, Gerald Martin, 1321 Cravens Ave., Torrance, Calif., ALR
Eckley, Robert, 2001 Fourth Ave., San Diego 1, Calif., OP
Ellis, Richard A., 269 S. 19th St., Philadelphia 3, Pa., OP
Evans, Warren Cavill, Box 122, U. S. Army Hospital, Fort Benning, Ga., ALR

Fair, John Russell, Meridian, Ga., OP
Farrior, Richard Thomas, 509 Bay Shore at Hyde Park, Tampa 6, Fla., ALR
Fellows, Victor Gerald, Jr., 595 Buckingham Way, San Francisco 27, Calif., OP
Fenning, Frederick Reid, 55 Front St., Binghamton, N. Y., ALR
Fial, Edward A., 90 Berwyn Ave., Buffalo 15, N. Y., OP
Filkins, John Clayton, 418 City Nat'l Bank Bldg., Omaha 2, Neb., OP
Finley, John Kent, 51 Kings Highway West, Haddonfield, N. J., OP
Fleming, Frank Reavis, Hugh Chatham Memorial Hospital, Elkin, N. C., OP
Flynn, James L., 520 Commonwealth Ave., Boston 15, Mass., OP
Flynn, John E., 375 E. Main St., Bay Shore, L. I., N. Y., OP
Forrest, Robert Lee, 1535 Mesita Rd., Apt. 304, Colorado Springs, Colo., OP
Fortier, Jean Paul, Room 201, Continental Bldg., Sherbrooke, Que., Canada, OP
Francis, Gordon Herbert, 925 W. Georgia St., Vancouver, B. C., Canada, ALR

Francois, J., Place de Smet de Naeyer 15, Gand, Belgium, OP

Frerichs, Douglas Wayne, 111 E. Medlock Dr., Phoenix, Ariz., ALR

Friedland, Walter, 210 Main St., Hackensack, N. J., OP

Friedman, Herbert S., 171 E. Post Rd., White Plains, N. Y., ALR

Fuerste, Frederick, Jr., 605 American Trust Bldg., Dubuque, Iowa, OP

Garlinghouse, A. John (Capt.), Randolph Air Force Base, Texas, ALR

Gervais, Russell F., 16 Center St., Northampton, Mass., ALR

Gill, John A., 1200 E. Broad St., Richmond 19, Va., ALR

Gingrich, Wendell Daniel, University of Texas Medical School, Galveston, Texas, OP

Gleitsman, Louis Augustus, 434 High St. N.E., Warren, Ohio, OP

Goldman, Irvin A., 408 Huey P. Long Ave., Gretna, La., ALR

Goldner, Abraham Isaac, 35-02 168th St., Flushing 58, N. Y., ALR

Goodman, Edward, 1882 Grand Concourse, New York 57, N. Y., OP

Goodman, James D., 120 Middle Ave., Elyria, Ohio, OP

Gould, Wilbur James, 70 E. 73rd St., New York 21, N. Y., ALR

Grabske, Charles Frederick, Jr., 129 W. Lexington, Independence, Mo., ALR

Gupta, Indar Sagar, Sunnybrook Hospital, Toronto, Ont., Canada, ALR

Haase, Frederick Robert, 5515 Hilltop Ave., Baltimore 6, Md., ALR

Halperin, David, 1390 Sherbrooke St. West, Montreal 25, Que., Canada, ALR

Hanley, William John, 406 Hackley Bank Bldg., Muskegon, Mich., OP

Hansen, Axel Carl, Meharry Medical College, Nashville 8, Tenn., OP

Harding, Glen Fostner, 460 23rd St., Ogden, Utah, OP

Harms, Harold Harvey, Green Clinic, Ruston, La., OP

Harper, Lamar Blewett, 607 Fourth Ave., Yuma, Ariz., OP

Harris, Irwin, 416 N. Bedford Dr., Beverly Hills, Calif., ALR

Harris, James Robert, 1016 W. Cannon, Fort Worth, Texas, ALR

Hauck, Dale Leon, 453 S. Soto St., Los Angeles 33, Calif., OP

Hawkins, Robert Emmet, 211 Medical Arts Bldg., Omaha 2, Neb., ALR

Hayden, George Douglas, Medical College of Virginia, Richmond 19, Va., ALR

Hays, Jack Ross, 310 Van Antwerp Bldg., Mobile 12, Ala., ALR

Hazen, Robert Melville, 4050th A.S.U., U. S. Army Hospital, Ft. Sill, Okla., ALR

Henry, Marvin D., 7141 S. Jeffrey Ave., Chicago 49, Ill., OP

Hinton, Clarence David, 1116 W St., N.W., Washington, D. C., ALR

Holman, James Maye, 525 E. 68th St., New York 21, N. Y., ALR

Horwich, Harry, 744 Woburn Ave., Toronto, Ont., Canada, OP

Hui, Robert Moon, 180 Fort Washington Ave., New York 32, N. Y., ALR

Hunt, Harold Eugene, 150 Eighth St., S.E., Paris, Texas, OP

Jim, Vernon K. S., Mayo Clinic, Rochester, Minn., OP

Johnson, Samuel B., 319-25 Plaza Bldg., Jackson, Miss., OP

Jones, Arthur Denton, 1707 San Marco Blvd., Jacksonville 7, Fla., ALR

Jones, Edward Tracy, 400 E. Grand Ave., Beloit, Wis., OP

Jorgenson, Ralph E., 79 E. Third Street North, Provo, Utah, OP

Kellerman, Leo David, 61-34 188th St., Flushing 65, L. I., N. Y., OP

Kelley, Robert Reed, Box 164, William Beaumont Army Hospital, El Paso Texas, OP

Kent, Charles, 270 Commonwealth Ave., Boston 16, Mass., ALR

Kent, Louis Richard, 104 W. Clark St., Champaign, Ill., OP

King, George David, 605 Commonwealth Ave., Boston 15, Mass., ALR

Kirschberg, Leo Sanford S., 1390 Sherbrooke St. West, Montreal 25, Que., Canada, OP

Kopp, Ernst Alfred, Veterans Administration Hospital, Albany 8, N. Y., ALR

Krech, William J., 683 E. Broad St., Columbus 15, Ohio, ALR

Labriola, Charles, 141 Noble St., Brooklyn 22, N. Y., OP

Lagonegro, John Harry, 419 Walnut St., Elmira, N. Y., ALR

Lancaster, Mary Agnes, 1316 Medical Arts Bldg., Dallas 1, Texas, OP

Landau, Maurice, 108-22 70th Ave., Forest Hills, N. Y., OP

Landers, Gardner H., 506 W. Faulkner St., El Dorado, Ark., OP

Larkin, Watson Bright (Comdr.), U. S. Naval Hospital, Great Lakes, Ill., ALR

Lawson, Lawrence James, Jr., 636 Church St., Evanston, Ill., OP

Lees, James Kinler, 1321 Cravens Ave., Torrance, Calif., ALR

Leigh, Milton Moses, 109 S. Broad St., Mobile, Ala., ALR

Leigh, Richard E., Jr., 523 Medical Arts Bldg., Houston 2, Texas, OP

Lemon, Arden Neil, 3701 N. Broad St., Philadelphia 40, Pa., ALR

Lerner, Sidney Simon, 6226 N. 16th St., Philadelphia 41, Pa., ALR

Linfesty, John William (Col.), USAF Hospital, Feamcon Air Base, San Francisco, Calif., OP

Linthicum, Frederick H., 523 W. Sixth St., Los Angeles 14, Calif., ALR

Lipani, John G., 921 President St., Brooklyn 15, N. Y., OP

Littell, Joseph Jerome, Jr., 711 D St., San Rafael, Calif., ALR

Little, Robert Herriot, 455 Warren St., Hudson, N. Y., ALR

Livingood, William Cook, U. S. Naval Hospital, Philadelphia 45, Pa., ALR

Lockhart, George, III, 2020 E. 93rd St., Cleveland 6, Ohio, OP

Long, Charles Edward, 1092 Madison Ave., Memphis 3, Tenn., ALR

Long, Ira Morris, 903-4 Medical Arts Bldg., Chattanooga 3, Tenn., OP

Loughran, Elbert Hall, 135 E. 65th St., New York 21, N. Y., ALR

Luton, James Polk, 203 Medical Arts Bldg., Oklahoma City 2, Okla., OP

Maher, Joseph J., Guthrie Clinic, Sayre, Pa., ALR

Maisonville, Philippe St. Louis, 718 Granville St., Vancouver 2, B. C., Canada, OP

Marbry, George Walter, 408 Hynds Bldg., Cheyenne, Wyo., ALR

Markey, Frank R., 13810 Michigan Ave., Dearborn, Mich., OP

Markley, Richard E., 520 Mayer Bldg., Portland 5, Ore., OP

Marks, Salvo Philip, 5305 Hohman Ave., Hammond, Ind., OP

Marshall, Mark Robert, University Hospital, Edmonton, Alta., Canada, OP

Martin, Roy Allan, 1706 Heyburn Bldg., Louisville 2, Ky., ALR

Matteson, Albert Reese, 101 W. North St., Danville, Ill., ALR

Mazzarella, Lawrence Aurelio, 220 Sterling Place, Brooklyn 38, N. Y., ALR

McCally, Albert Ward, Jr., Fidelity Medical Bldg., Dayton 2, Ohio, OP

McCrea, Harold J., 111 W. 21st St., Olympia, Wash., ALR

McKercher, Donald Douglas, 405 Medical Arts Bldg., Ottawa, Ont., Canada, ALR

McMurray, David John, 826 Arbutus Drive, Columbia, S. C., ALR

Melant, Joseph Henry, 1105 Broadway, Buffalo 12, N. Y., ALR

Messina, Joseph Michael, 8821 Reseda Blvd., Northridge, Calif., ALR

Meyer, Dexter, Jr., Lt. (MC) USNR, U. S. Naval Hospital, Mare Island, Vallejo, Calif., OP

Michels, Merrill William, 280 W. MacArthur Blvd., Oakland 11, Calif., ALR

Millonig, Arthur Frederick, 770 Fidelity Bldg., Dayton 2, Ohio, ALR

Mills, Charles Kelley, 314 E. Main, Gainesville, Texas, OALR

Mirmelstein, Alvin B. H., 3015 West Ave., Newport News, Va., ALR

Mohney, Glenn E., U. S. Army Hospital, Camp Gordon, Augusta, Ga., OP

Monahan, Robert Hugh, 1023 Lowry Medical Arts Bldg., St. Paul 2, Minn., OP

Monestere, Charles Joseph, 1073 Bushwick Ave., Brooklyn 21, N. Y., OP

Montgomery, Daniel Cameron, Jr., 124 S. Broadway, Greenville, Miss., ALR

Moore, Bernard J., Murphy Army Hospital, Waltham, Mass., ALR

Morelli, Lorenzo, 290 W. Michigan Ave., Jackson, Mich., ALR

Nachlas, Nathan Edward, Latrobe Bldg., Charles & Reed Sts., Baltimore 2, Md., ALR

Nelson, Donald George, 1640 H St., Bakersfield, Calif., OP

Nesburn, Henry Roger, 632 S. San Vicente Blvd., Los Angeles 48, Calif., OP

Nystrom, Robert Elmer, 1442 N. Third, Abilene, Texas, OP

Oosterhous, George Edward, 304 W. Washington Ave., Madison 3, Wis., OP

Orrico, Joseph Frank, 4756 W. Fullerton Ave., Chicago 39, Ill., ALR

Parker, Charles Orville, Jr., U. S. Naval Hospital, Philadelphia 45, Pa., OP

Pashby, Thomas Joseph, 1050 Avenue Road, Toronto, Ont., Canada, OP

Paterson, William Patrick Emery, 607 Medical Arts Bldg., Ottawa, Ont., Canada, ALR

Pember, John Frank, 508 W. Milwaukee St., Janesville, Wis., OP

Petitti, Leonard N., EENT Section, U. S. Army Hospital, Camp Carson, Colo., ALR

Pierce, Maurice Murray, 432 Medical Arts Bldg., Winnipeg, Man., Canada, ALR

Pilger, Irvin S., 1135 LaDera Dr., Long Beach 7, Calif., OP

Placek, Louis Thomas, 425 Aquila Ct., Omaha 2, Neb., ALR

Poushter, David Leon, 608 E. Genesee St., Syracuse 2, N. Y., ALR

Power, John Edward, Jr., 324 W. Superior St., Duluth 2, Minn., OP

Reasoner, Billy Elmer, Great Falls Clinic, Great Falls, Mont., OP

Reed, Howard Newns, Winnipeg Clinic, Winnipeg, Man., Canada, OP

Rees, Robert Lorraine, 115 E. South Temple St., Salt Lake City 1, Utah, OP

Reik, Louis, 807 Madison Ave., Covington, Ky., OP

Riccio, Frank Joseph, 923 E. Main St., Bridgeport, Conn., ALR

Rice, Earle W., 136 Flagg St., Worcester 8, Mass., ALR

Riggs, Cecil Dempsey, U. S. Naval Hospital, Oakland, Calif., ALR

Roth, Carl W., 22 Buttles Ave., Columbus 8, Ohio, ALR

Ruedemann, Albert Darwin, Jr., 1633 David Whitney Bldg., Detroit 26, Mich., OP

Rullan, Antonio, Ave. Ponce de Leon 1803, Santurce, Puerto Rico, ALR

Ruth, Paul Easton, 510 Dollar Bank Bldg., Youngstown 3, Ohio, OP

Sands, Abraham M., 874 Carroll St., Brooklyn 15, N. Y., OP

Saunders, Leslie, 3 Northampton Rd., Amsterdam, N. Y., ALR

Saunders, William H., University Hospital, Ohio State University, Columbus, Ohio, ALR

Schiller, Filmore, 628 E. 185th St., Cleveland 19, Ohio, ALR

Schopp, Robert Colin, 999 Delaware Ave., Buffalo 9, N. Y., OP

Scott, Gordon Hilbert, 8 S. Michigan Ave., Chicago 3, Ill., ALR

Serio, Joseph C., 591 Delaware Ave., Buffalo 2, N. Y., ALR

Shapiro, Myron J., 198 Clinton Ave., Newark 5, N. J., ALR

Shea, Samuel E., McCannel Clinic, Minot, N. D., ALR

Shepperd, Lewis A., 580 Park Ave., New York 21, N. Y., ALR

Shirley, Samuel Yarn, Medical Arts Bldg., Ottawa, Ont., Canada, OP

Shoch, David, 700 N. Michigan Ave., Chicago 11, Ill., OP

Simon, Marshall Urkov, 2335 Devon Ave., Chicago 45, Ill., ALR

Skelly, John Francis, 201-3 Lettunich Bldg., Watsonville, Calif., ALR

Smillie, John Wilson, Veterans Administration Hospital, Ann Arbor, Mich., OP

Smith, James Brydon, 174 St. George St., Toronto, Ont., Canada, ALR

Smith, Taylor, 711 D St., San Rafael, Calif., OP

Smith, William Lloyd, (Comdr.), U. S. School of Aviation Medicine, U. S. Naval Air Station, Pensacola, Fla., OP

Sotoodeh, Bagher, 1513 Escalante Ave. S.W., Albuquerque, N. M., ALR

Stambaugh, James Lee, Jr. (Capt.), 2164-1 ASU, U. S. Army Hospital, Fort Eustis, Va., OP

Stamm, Thomas James, 7351 North Ave., River Forest, Ill., OP

Stern, Manfred, 771 West End Ave., New York 25, N. Y., ALR

Stiernberg, Royall Campbell, 411 Third Ave. N., Texas City, Texas, ALR

Stock, Karl William, Mills Bldg., Topeka, Kan., OP

Stonkus, John A., 725 Fourth St., Marysville, Calif., ALR

Taquino, George James, Jr., 1313 Nat'l Bank of Commerce Bldg., New Orleans 12, La., ALR

Thompson, John Madison, 921 Lincoln Way East, South Bend, Ind., OP

Thompson, Ollie Hammond, Jr., 218 N. Division St., Salisbury, Md., OP

Tibbens, George Filmore, 535 Washington Trust Bldg., Washington, Pa., OP

Trakas, John Christos, 1269 Beacon St., Brookline 46, Mass., ALR

Traul, Robert Earl, 110 W. Main Cross, Findlay, Ohio, OP

True, William Ray, 518 Professional Bldg., Monterey, Calif., OP

Tschiassny, Kurt, 101 Louis Ave., Cincinnati 20, Ohio, ALR

Vancil, Gordon Quincy, 164 Division St., Elgin, Ill., OP

Wade, Frederick Ellsworth, 1103 Grand Ave., Room 202, Kansas City 6, Mo., OP

Wahl, John William, 353 S. Westmoreland Ave., Los Angeles 5, Calif., ALR

Walker, Duncan DeVane, Jr., 753 Pine St., Macon, Ga., ALR

Watson, Thomas Young, 315 Wabeek Bldg., Birmingham, Mich., OP

Weisbach, Philip T., Jr., 560 Center St., Beaumont, Texas, OP

White, David, 1136 W. Sixth St., Los Angeles 17, Calif., ALR

White, Thomas Paul, 520 Commonwealth Ave., Boston 15, Mass., OP

White, Wesley Rhys, 327 N. Washington Ave., Scranton 3, Pa., ALR

White, William Otis, 1345 Greene St., Augusta, Ga., OP

Wilder, Raboteau T., First Nat'l Bank Bldg., Bluefield, W. Va., ALR

Willard, Robert L., 2360 Monroe St., Toledo 2, Ohio, OP

Williams, Marvin Lee, 619 Main St., Texarkana, Texas, ALR

Wilson, Henry Beatty, 6 E. Eager St., Baltimore 1, Md., OP

Wishbow, Alexander John, 214 South St., Morristown, N. J., OP

Wishlow, Nicholas Frederick, 123 Main St., Chilliwack, B.C., Canada, OP

Wright, William Ross, 361 Regent St., Fredericton, N.B., Canada, OALR

Yourd, Raymond Atchison, 104 W. Clark St., Champaign, Ill., ALR

Zahry, Ney John, 2300 Truxtun Ave., Bakersfield, Calif., ALR

Zinn, Sheldon, 1260 W. Columbia, Chicago 26, Ill., OP

The Council recommends the election of the following officers for the year 1955:

President: Dr. Algernon B. Reese

President-Elect: Dr. A. C. Furstenberg

First Vice-President: Dr. Philip E. Meltzer

Second Vice-President: Dr. William B. Clark

Third Vice-President: Dr. Howard P. House

Councillor: Dr. Harold H. Joy for a 4-year term

Executive Secretary-Treasurer: Dr. William L. Benedict

Secretary for Ophthalmology: Dr. Kenneth L. Roper

Secretary for Otolaryngology: Dr. Lawrence R. Boies

Secretary for Instruction in Ophthalmology: Dr. A. D. Ruedemann, Sr.

Secretary for Instruction in Otolaryngology and Maxillofacial Surgery, Dr. Dean M. Lierle

Secretary for Home Study Courses, Dr. Daniel Snydacker

Secretary for Public Relations, Dr. Erling W. Hansen

I move the election of officers as recommended by the Council.

The motion was seconded by Dr. Ralph I. Lloyd and carried.

The Council recommends that the Executive Secretary-Treasurer be empowered to apply for membership of the Academy in the International Federation of Ophthalmological Societies. I move that this recommendation be accepted.

The motion was seconded by Dr. Francis E. LeJeune and carried.

The Council recommends that the next scientific session of the Academy be held at the Palmer House in Chicago, October 9-14, 1955. I move the adoption of this recommendation.

The motion was seconded by Dr. Francis E. LeJeune and several others and carried.

Mr. President, I wish to recommend the acceptance of this entire report.

On motion of Dr. Francis E. LeJeune, seconded by Dr. S. Rodman Irvine, the report was accepted as read.

PRESIDENT THEOBALD: Is there any unfinished business to be presented?

DR. BENEDICT: There is nothing on the table, Mr. President.

PRESIDENT THEOBALD: Is there any new business to be presented?

DR. BENEDICT: There is nothing here.

PRESIDENT THEOBALD: Now I have the very distinct honor and pleasure of asking Dr. Roper and Dr. Irvine to escort the new President to the Chair, if they will, please.

(Drs. Roper and Irvine escorted Dr. Reese to the rostrum. Applause)

DR. REESE: Dr. Theobald, on behalf of the Academy I would like to thank you for the outstanding manner in which you have acquitted yourself as President.

It is true that the presidency of the Academy is honorary and in no sense ornery. (Laughter) It is important, though, that the President, or the front man, shall I say, carry the banner high, and this you have done. I hope that I can emulate you.

Dr. Benedict said that I have to tell a story. Well, of course, it is a complete surprise to me that I am elected. (Laughter) And I am utterly unprepared. I really have no story that is worthy of the occasion.

I will say that very often the ladies are told that their slips are showing, and I know a wife who tells her husband that his face is showing. If my face is not showing now it should be because I am very proud and sort of overwhelmed at the idea.

This is coming to the story that I have concocted, and it is that a short time ago I examined a patient and I told him that it was now time for him to wear bifocals. He said, "Oh, my god, this is it. This is the fourth B."

I said, "What do you mean by the fourth B?"

"Well,' he said, "it is along the road to senescence. It is baldness and bridge work and belly and then bifocals."

I think I have now added another B and I am a Big Whig. I am a Big Whig for a year. But the other four B's are unpleasant and the fifth B is very pleasant. However, like many pleasant things it is very fleeting.

Now I want to say that it is my great desire to serve well, and I don't see how anyone can miss with this wonderful Academy family back of him.

Thank you very much. (Applause)

PRESIDENT THEOBALD: Thank you, Dr. Reese, for your gracious sentiments and exhilarating remarks. I trust your term of office will be as pleasant and as stimulating as mine has been.

I am sorry to announce that we cannot have Dr. Furstenberg brought to the Chair and presented to you. Circumstances evidently took him out of the city, and furthermore he knew nothing of this new honor coming to him.

This concludes our business meeting, gentlemen, but I cannot close without taking this opportunity to express to you my very deep and profound gratitude and my thanks to this sterling executive group. I refer especially to Dr. Benedict. I want also to include his most able secretary, Mrs. Ledgerwood.

I want also to express thanks to Dr. Hansen who has been the mover of all the scenery, and to the entire secretarial board.

This group, of course, has made this very high tribute to me an easy and yet a thrilling role. The task of being President of this great organization is one that one looks forward to with keen anticipation and gets a great deal of joy out of it. I am grateful to all of you.

The Academy members have had a fine spirit which I have sensed all over, and that has made this a very successful meeting.

I thank you, gentlemen. (Applause)

The meeting adjourned at 6:10 o'clock.

COMMITTEE REPORTS

Upon recommendation by the Activities Committee, the Council voted acceptance of the following reports of standing and joint committees:

REPORT OF THE ARMED FORCES COMMITTEE

M. Elliott Randolph, M.D., Chairman

In my capacity as Chairman of the Armed Forces Committee of the Academy, this is to notify you that I have nothing to report on the activities of this Committee for the past year.

REPORT OF THE COMMITTEE ON CONSERVATION OF HEARING

Dean M. Lierle, M.D., Chairman

The Committee on Conservation of Hearing will not have had a general meeting before the Academy meeting in September but will meet in Chicago at the Palmer House, October 27 and 28. We expect to reorganize the Committee into five working committees which will include noise, public relations, editorial, research and education.

The general idea of these smaller committees is to meet under the guidance of a subchairman several times a year about their work and then report at a general meeting once a year. This will be somewhat more expensive due to some added travel expense, but we feel a great deal more can be accomplished. The Academy and the otological profession in general should have a great deal more information as far as education is concerned. The Committee expects to produce some educational films and pamphlets during the next year.

Dr. House has advised us that the National Association of Mutual Casualty Companies have granted $90,000 for the next five years; however, with the expressed wish that the Academy allocate at least a token amount of $5,000 to indicate the Academy's continued interest in sponsorship. We would, therefore, respectfully ask for $10,000 a year; $5,000 to be allocated for the Committee on Noise, and $5,000 for the general committee for expenses such as travel. The Committee is, of course, sponsoring the scientific meeting on Sunday night in conjunction with the Sub-Committee on Otosclerosis.

The following is a brief summary of the activities of the Sub-Committee on Noise in Industry since the first of July, 1953, to be presented to the Council.

Report of the Sub-Committee on Noise in Industry

Considerable data in the form of noise measurements and audiograms have been received from various industries throughout the country. Notable among these were 15,000 audiograms from a local aircraft industry. These audiograms had been analyzed and placed on I.B.M. cards. The Sub-Committee received a volume with the complete I.B.M. breakdown. It is obvious, of course, that a wealth of information will be obtained from these data. This is typical of the work and data obtained during the period reported.

The members of the Sub-Committee and full-time staff have spent considerable time writing articles and giving talks before many and various industrial and related groups. This type of effort is extremely important and necessary. It helps educate industry and thereby provides sources of data which are the lifeline of the Sub-Committee research. It has become evident during the past four to six months that these educational efforts have begun to pay off. The sources of data and locations for active field research have increased many times.

Probably the two most important events during this year were related to financial backing for the work of the Sub-Committee. First: The National Association of Mutual Casualty Companies have increased their support since July 1953, by 100 per cent—the Sub-Committee received two grants of $10,000.00 as compared to the previous year when only one grant of $10,000.00 was received. Second: The National Association of Mutual Casualty Companies have guaranteed at least $90,000.00 per year for the five years beginning July 1, 1954. This decision resulted from a proposal prepared by the Sub-Committee and presented to the National Association of Mutual Casualty Companies prior to March 1, 1954. The assurance of this amount of financial backing has made it possible to expand the work and scope of the Sub-Committee. The enclosed organizational chart will clearly present the personnel needs for this expansion.

Because of the rapid and highly significant developments in the industrial noise problem, it is imperative that the research activities of the Sub-Committee be expanded. The de-

mand for facts based on reliable data increases daily. The activities of the legislative bodies throughout the nation must be preceded by the acquisition of basic information on the problem if we are to expect intelligent and logical compensation laws governing the noise-induced hearing loss cases. Fortunately, industry has recently seen the need for this and agreed to provide the largest share of the future budget requirements.

The Sub-Committee on Noise in Industry recently prepared several budget proposals totaling $120,000. This figure was considered the minimum required for the first year (July 1, 1954, to July 1, 1955) of a proposed five-year program, with the subsequent needs amounting to about $90,000 per year.

The National Institutes of Health were asked to make a grant in aid of $47,000. The National Association of Mutual Casualty Companies were asked to supply the difference, or $73,000. Both proposals are being reviewed at present. The National Association of Mutual Casualty Companies have guaranteed a total of $90,000 for the first year. The National Institutes of Health will conclude their consideration in October 1954. We will have no assurance of a favorable consideration until then.

The proposed expanded program will be designed to study specific problems of interest to industry. For example:

1. Permanency, or when may a noise-induced hearing loss be considered permanent and stable.
2. The validation of disability rating scales.
3. Temporary threshold shift due to noise.
4. Presbycusis.
5. The long-term study of the relations of hearing loss to noise exposure.
6. Ear protection.

In order to carry out the above program expeditiously, the following personnel are necessary:

1. A director who is an otologist (full time).
2. An audiological team (5 full time).
3. A statistical team (1 full time and 1 part time).
4. An acoustical physicist (1 part time).
5. Office (3 full time).

This expansion would require considerable more equipment and space.

The Sub-Committee on Noise in Industry feels that this work is of extreme national importance. The Academy has been acutely aware of this since 1947 and has proved it by generous financial support during the past seven or eight years. We feel that since the problem of hearing conservation is primarily medical, the Academy should not only continue the supervision of this research but be given the privilege of supporting it financially, even if only in a small way. The Sub-Committee feels that such supervision and support will not only add to the prestige of the work but also act to promote and cement good relations with the general public as well as industry.

REPORT OF THE COMMITTEE ON OPHTHALMIC PATHOLOGY

MICHAEL J. HOGAN, M.D., Chairman

The Committee on Ophthalmic Pathology has held one informal meeting this year. Most of the activities have been conducted by letter.

The following matters have been considered:

1. *Teaching Manuals on Ophthalmic Pathology*

The manuals under consideration and preparation are to be used as supplements to the Text and Atlas sponsored by the Academy. The titles and authors of these manuals have been given in previous reports.

Several of the manuals are complete, except for illustrations.

2. *Presentation of Pathologic Material in General Sessions*

It has been observed that the pathologic material presented in recent symposia has been offered by persons with no background or experience in pathology. These authors are forced to turn to ophthalmic pathologists for material and advice. The Academy is well supplied with excellent ophthalmic pathologists and it is suggested they be invited to present such material in symposia.

3. *Report of the Ophthalmic Pathology Registry*

1 January 1953—31 December 1953

Two thousand two hundred and seventeen (2217) specimens were contributed to the Registry of Ophthalmic Pathology during 1953. Of these, 1229 were whole eyes: 1169 human and 60 animal (75 per cent from civilian contributors). The other 988 cases were sectioned eyes and specimens from the conjunctiva, lids and orbit (33 per cent from civilian contributors). There is now a total of 38,683 accessions in the Registry. During the year the total backlog was reduced by 258 cases. On 31 December 1953 there were 1160 cases being processed through the laboratory and an additional 2299 cases with slides prepared but reports not yet completed—a total backlog of 3459 cases.

The Registry loan sets were borrowed by 134 individuals: 34 in the Armed Forces, 3 in the Public Health Service, 9 in the Veterans Administration, and 88 civilians.

The laboratory prepared 15,889 microscopic slides. This figure includes 35 sets of 50 slides each, for teaching and loan material, and 16 cases for the special study on etiology of granulomatous uveitis. Two thousand four hundred and sixty-two (2462) reports have been sent out to contributors. This figure includes 2148 final reports and 314 preliminary reports.

Fifty-nine (59) copies of the Third Edition of The Atlas of Opthalmic Pathology by DeCoursey and Ash were sold.

Courses. Participation in the presentation of the continuous pathology course given at the American Academy of Ophthalmology and Otolaryngology, October 11-16, 1953, Chicago, Illinois. Mrs. Wilder assisted Dr. Georgiana Theobald.

A course in Ophthalmic Pathology was conducted at the Armed Forces Institute of Pathology to the Armed Forces and Civilians, February 9-13, 1953, Washington, D. C. (Section of Ophthalmic Pathology).

A continuous course in Ophthalmic Pathology for residents of Walter Reed Army Hospital, Washington, D. C., was given March 13 to May 15, 1953. (Capt. Frederick R. Carriker).

Presentation of Lancaster Course in Ophthalmology at Waterville, Maine, July 6-18, 1953 (Mrs. Wilder).

Exhibits. An exhibit on "Toxoplasma Chorioretinitis in Adults" was presented at the meetings of the Internal Association of Medical Museums and the American Association of Pathologists and Bacteriologists, March 31-April 4, 1953, in St. Louis, Mo.

Same exhibit on "Toxoplasma Chorioretinitis" was presented at the Section on Ophthalmology, American Medical Association, May 31-June 5, 1953, New York, N. Y.

An exhibit, "Organisms Identified in Inflammatory Lesions of the Eyes in the Registry of Ophthalmic Pathology" presented by Mrs. Wilder and Major J. H. Bickerton, USAF (MC) won First Award at the meeting of the American Academy of Ophthalmology and Otolaryngology, Oct. 11-16, 1953, Chicago, Illinois.

Papers Read. "Serologic Data on Adults with Histologically Diagnosed Toxoplasmic Chorioretinitis," Meeting of the American Academy of Ophthalmology and Otolaryngology, October 11-16, 1953, Chicago, Illinois, by H. C. Wilder.

Papers Published. "Toxoplasma-like Protozoa in Chorioretinitis in Adults," Am. J. Trop. Med. & Hyg., 2:417-419, 1953, by H. C. Wilder.

"Serologic Data on Adults with Histologically Diagnosed Toxoplasmic Chorioretinitis." Tr. Am. Acad. Ophth. 58:193-200 (March-April) 1954, by Leon Jacobs, Ph.D., M. Katherine Cook, M.S., Helenor Campbell Wilder.

Papers Discussed. "Uveitis, A Military Problem" (Maj. John R. Fair's paper), Section of Ophthalmology, A. M. A., May 31-June 5, 1953, New York, N. Y., Discussion: H. C. Wilder.

Unfinished Projects. "Granulomatous Chorioretinitis, Etiology Undetermined," H. C. Wilder and J. H. Bickerton, Major, USAF (MC), November 1951.

"Epithelization of Anterior Chamber Following Cataract Extraction," Arnall Patz, 1952.

"Mixed Tumors of the Lacrimal Gland," Lauren V. Ackerman, M.D., and T. E. Sanders, M.D.

General DeCoursey makes the following personal report:

"You will note that during 1953 the total backlog was reduced by 258 cases.

"I am pleased to report that during the first six months of 1954 our backlog has been further reduced by over 500 cases. At the end of June 1954 there was a backlog in the laboratory of 961 cases and an additional backlog of 1816 cases in which slides have been prepared but reports not yet completed. Thus the total backlog by the end of June had been reduced to 2777 cases.

"I should like to announce that Dr. Lorenz E. Zimmerman, who was separated from active duty with the Army Medical Corps on July 31, 1954, will continue as Chief of the Ophthalmic Pathology Registry in a civilian capacity."

4. It is suggested again that the Academy sponsor the publication of a list of eye pathology laboratories capable of and willing to process eyes for civilian ophthalmologists. The backlog of eyes at the Registry indicates this necessity. Some areas of the country are unable to obtain service, and we feel it is important to maintain the standards by expediting the processing of pathologic specimens.

Such a change will not in any way detract from the value of the Registry, and General DeCoursey has urged that civilian eyes be processed by general eye pathology laboratories. The individual laboratories would then be responsible for forwarding interesting ma-

terial to the Registry. This was discussed in detail in our 1952 report.

We would suggest the publication of the list in the *Transactions, the American Journal of Ophthalmology*, and *the A.M.A. Archives of Ophthalmology*.

The Committee would be glad to furnish the list of laboratories if the Council desires to pursue this matter further.

REPORT OF COMMITTEE ON OTOLARYNGIC PATHOLOGY

PAUL H. HOLINGER, M.D., Chairman

The Committee on Otolaryngic Pathology has endeavored to re-define the anatomical areas that should be included in the field of otolaryngic pathology. This is being undertaken with the assistance of the Chief of Otolaryngic Pathology of the Pathology Division of the Armed Forces Institute of Pathology. This is a report of progress on this subject.

It is the request of the Committee that appropriate publicity be given the fact that a Fellowship in Otolaryngic Pathology has been authorized by the Director of the Armed Forces Institute of Pathology and the Scientific Director of the American Registry of Pathology. This valuable training Fellowship has been sought by the Committee for several years and it is gratifying that it is now available.

REPORT OF COMMITTEE ON PAN-AMERICAN RELATIONS IN OPHTHALMOLOGY

CONRAD BERENS, M.D., Chairman

The Committee has had but one meeting, for the purpose of organizing, on October 11, 1953.

A Subcommittee on Aims and Scope was appointed.

As a result of recommendations made at this meeting the IV Pan-American Congress of Ophthalmology, Santiago, Chile, and the III Interim Meeting, Sao Paulo, were publicized in the ophthalmic journals.

Recommendations were sent to the American Academy of Ophthalmology and Otolaryngology:

1. That at the Academy meetings two or three short courses in the fields of glaucoma and motility be presented in English and that they be presented by an interpreter in Spanish or Portuguese as translated from the original lecturer's notes. The original lecturer to attend the session given in Spanish or Portuguese and enter into the discussion through the interpreter.
2. That the Academy invite annually one representative from each of the Latin American countries, the invitations to be rotated among the ophthalmologists of each of the various nations.

One successful cocktail party was held in Chicago at the meeting where Latin Americans and the North Americans met and mingled, and a similar party is planned for this year in New York.

[Accepted without approval of requests]

REPORT OF THE COMMITTEE ON PREVENTION OF BLINDNESS

RALPH I. LLOYD, M.D., Chairman

There has been no matter of importance during the past year which required consideration by the Committee.

REPORT OF THE COMMITTEE ON SCIENTIFIC EXHIBIT

KENNETH L. ROPER, M.D., Chairman

The following is a report of the activities of the Scientific Exhibit Committee for the past year for presentation to the Council at its annual meeting, Saturday, September 18, 1954.

Dr. Eugene L. Derlacki, Chicago, has served as co-chairman of the Committee.

Throughout the year the Academy Committee has worked in close cooperation with the Scientific Exhibit Committee of the XVII International Congress of Ophthalmology, of which Dr. Maynard C. Wheeler, New York, is chairman.

Both Dr. Derlacki and I attended the meeting of the Program Committee held in New York, January 7. A joint meeting was held with Dr. Wheeler the previous day. Dr. Benedict and Mr. A. Fischer of the Waldorf-Astoria also sat in conference with us. Following this meeting Dr. Derlacki and I, accompanied by Mr. Fischer, made exact measurements of all available scientific exhibit space allotted us and in a few instances picked up additional footage not shown on the hotel blueprints.

Upon my return to Chicago I immediately prepared a draft of a combined Application for Scientific Exhibit Space and forwarded it to Dr. Benedict's office for approval and printing.

During the ensuing weeks the problems and decisions of the two Committees multiplied; and to better solve them Dr. Wheeler and I met in New York the weekend of March 26. Before making this trip to New York Dr. Derlacki and I had had a conference the evening of March 23.

Prior arrangements having been made, Mr. George F. Nolan, Manager, Exhibits-Conventions, United States Trucking Corporation; Mr. Howard E. George, Display Contractor, Strauss Decorating and Exposition Co., Inc; and Mr. A. Fischer of the Waldorf-Astoria also met with Dr. Wheeler and myself.

At the conclusion of this meeting it was quite clear that our scientific exhibitors were going to have to deal with four different organizations; namely, U. S. Trucking Corporation, Strauss Decorating and Exposition Company, Manhattan Storage and Warehouse Company, and the Waldorf-Astoria. I therefore prepared the "General Instructions for Exhibitors" and forwarded it to Dr. Benedict's office for approval and printing.

Although the deadline for application space had passed, Dr. Wheeler continued to receive applications from foreign exhibitors as late as June 12. The final allotment of exhibit space was therefore delayed until this late date. Since Dr. Wheeler was to be on vacation from mid-June until mid-July he forwarded all of his material to me together with the decisions of his Committee. He asked that I await receipt of three outstanding approved applications. Upon their receipt I set about the task of drafting the Scientific Exhibit Layout Diagrams—copy attached. The assistance of Mr. Herkert of the Palmer House was sought to expedite these prints. The Palmer House organization understands the Academy problems and is always most helpful.

Descriptive data for publication purposes in the TRANSACTIONS were forwarded to Dr. Benedict on June 29.

On July 23 Scientific Exhibit Layout Diagrams, together with a list of the scientific exhibitors and the booths they had been assigned, were forwarded to all concerned in the installation, handling, and servicing of the scientific exhibits.

Your attention is called to the ELECTRICAL SERVICE FOR EXHIBITS blank required of each exhibitor by the Waldorf-Astoria. While it has been contrary to our custom in past years when the Academy meetings were held in Chicago, it seems that it is customary at the Waldorf for the individual exhibitors to be billed and to have to pay their own light bills. The attached form makes this statement. As Chairman of the Scientific Committee I do not agree with the justice of this policy. It might be necessary for the Academy to reimburse some individual exhibitors for this expense. Under the circumstances I hope exhibitors will realize the expense of lighting and will keep their needs to a minimum.

A total of 37 scientific exhibits will be shown during Academy week—29 Eye and 6 ENT and 2 mixed. I was regretful to receive the cancellation on July 22 of Dr. Muriel Raum's ENT exhibit from the Armed Forces Institute of Pathology which was to occupy 20 feet of wall space.

Since the International Meeting precedes the Academy meeting, all Application for Space forms were forwarded to Dr. Wheeler on August 18 since they contained data important to the Display Contractor in the erection of the individual booths.

REPORT OF THE COMMITTEE ON STANDARDIZATION OF TONOMETERS

PETER C. KRONFELD, M.D., Chairman

1. *Testing Stations.* The work of the testing stations has continued along previously established lines. A detailed statistical report is attached. [On file in Academy office.]

2. *Certification of Tonometers.* Certification of tonometers by Electrical Testing Laboratories, Inc. has been continued.

3. The Decennial Report of the Committee on Standardization of Tonometers came off the press during June 1954. It is being distributed in accordance with plans made at the October 1953 meeting of the Committee.

4. The most important event of the year probably was that existing differences in the performance of electronic tonometers could be attributed to differences in plunger edge curvature.

5. A scientific exhibit on tonography and tonometry is being prepared for the meeting of the XVII International Congress of Ophthalmology and for the following Academy meeting.

6. The Committee decided to approve and adopt officially as the calibration scale of 1954 the scale based upon the calibration studies of Friedenwald and Grant reported in the Decennial Report.

REPORT OF COMMITTEE FOR THE STUDY OF AUDIO-VISUAL INSTRUCTION

DEAN M. LIERLE, M.D., Chairman

The Committee has scheduled no formal meetings during the past year.

The film on Embryology of the Ear has been completed and will have its premiere showing at the Motion Picture Program of the Academy on Thursday evening, September 23, in the Empire Room. The Committee wishes

to express its sincere appreciation to Dr. Franz Altmann, the Advisory Committee, and the Smithsonian Institution of Washington, D. C., for their efforts, so unselfishly given, which have made this film possible.

Forty-five prints of the companion film, Embryology of the Eye, have been sold to medical schools in this country and abroad.

REPORT ON THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

M. Elliott Randolph, M.D.,
Academy Representative

In my capacity as representative of the Academy to the American Association for the Advancement of Science, this is to notify you that I have nothing to report on the activities of this organization insofar as concerns the American Academy of Ophthalmology and Otolaryngology.

REPORT ON THE AMERICAN BOARD OF OPHTHALMOLOGY

F. Bruce Fralick, M.D.,
Senior Academy Representative

Since the last annual meeting of the Academy the American Board of Ophthalmology has held two practical examinations, one in Chicago, October 5-9, 1953 and one in San Francisco, June 25-29, 1954. Of the 108 taking the examinations at Chicago, 6 were failed. Of the 97 taking the San Francisco examinations, 8 were failed. In each examination a number of others were conditioned in individual subjects, and these candidates will be requested to pass a re-examination on these subjects at a future examination.

The 1954 Written Qualifying Tests were held in 26 cities on January 25 and 26, 1954. Two hundred and twenty-nine candidates passed and 16 failed their qualifying tests.

This year the multiple choice type of questions were used in all subjects of the examination. The difficulties of phrasing the questions and grading them are gradually being ironed out, and it is felt that this type of examination is much fairer to the candidates and does not impose such a burden on the examiners as does the old essay question. Kodachrome transparencies are being used more and more to give a wide diversification of clinical material during the practical examinations, since the type of cases obtainable for the candidates does not offer too good a latitude of subject material.

This year there will be a practical examination in New York City, December 5-9. In 1955 a practical examination has been scheduled for Philadelphia, June 10-15, and in Chicago, October 9-14.

A total of 54 ophthalmologists have served, or are serving on this Board which was organized in 1916. There have been 107 examinations held and 4,053 certificates issued.

Officers for 1954:

Chairman .....Walter S. Atkinson, M.D.
Vice Chm. .....Francis H. Adler, M.D.
Secy.-Treas. .....Edwin B. Dunphy, M.D.
Asst. Secy. .....Merrill J. King, M.D.

REPORT ON THE AMERICAN BOARD OF OTOLARYNGOLOGY

Francis E. LeJeune, M.D.
Gordon F. Harkness, M.D.
Academy Representatives

We wish to report that the American Board of Otolaryngology conducted an examination at the Hotel Statler in Boston, Massachusetts, May 17-21, 1954. Fifty-eight candidates were examined, and of this group, forty-six passed, eight conditioned, and four failed.

The Board will hold another examination at the Waldorf Astoria, New York City, September 13-17, 1954.

REPORT ON THE BOARD OF GOVERNORS OF THE AMERICAN COLLEGE OF SURGEONS

James H. Maxwell, M.D.
Academy Representative

1. In my report to you of last year, dated Oct. 12, 1953, there was included the report of the activities of the Board of Governors of the College during their meeting in Chicago which immediately preceded the meeting of the Academy. In this report I mentioned a communication from Dr. Charles Higgins to the Board of Governors in which he deplored the lack of specialty representation in the governing bodies of the College. It was recommended that his communication be distributed among the Board of Regents and the entire Board of Governors for their consideration. This distribution was made. It is assumed that there will be a further discussion of this problem at the next meeting of the Board of Governors to be held during the Clinical Congress of the College this fall.

2. Also at the meeting of the Board of Governors during the Clinical Congress this fall, there will probably be a report on the method of election of the Governors. Last fall the Committee appointed to study the method of election of Governors recommended that representation on the Board of Governors by

all special societies be equalized by having one representative on the Board from each such organization. No action was taken on this. At that time it was stated that reasons for not accepting this proposal were in order from the various societies concerned. It is to be hoped that the officers of the Academy communicated with the Board of Regents of the College since the Academy now has three representatives on the Board of Governors. I assume that action will be taken on this at the next meeting of the Board of Governors although I do not have their agenda.

REPORT ON THE COMMITTEE ON OPTICS AND VISUAL PHYSIOLOGY

KENNETH C. SWAN, M.D.
Academy Representative

The American Committee on Optics and Visual Physiology has continued its work throughout the past year. Its sixty-fourth meeting was held on October 11, 1953, at the Palmer House in Chicago. The sixty-fifth meeting was held on June 15, 1954, at Many Glacier Hotel, Glacier Park, Montana. The Academy's representatives were Kenneth C. Swan, Frederick C. Cordes and Alfred Cowan. Dr. Conrad Berens, who has for many years served as secretary and treasurer of the Committee, was unanimously elected chairman and was succeeded as secretary and treasurer by Dr. Gerald Fonda of New York.

The most important actions taken at the two meetings of the committee were as follows:

1. The subcommittee on Interprofessional Relations presented a report from the National Interprofessional Committee on Eye Care. The following is the most important statement:

"In taking cognizance of recent friction between optometrists and opticians, it is suggested that the committee take the position that overlapping and competition are inevitable. Each group should concern itself with its own areas of endeavor and be conceded autonomy in its effort to enlarge its activities in any direction, providing that it takes steps to first qualify its members in the services it purports to perform. The National Interprofessional Committee should be considered an open forum which welcomes attendance and participation by any person interested in the welfare of the nation's eyes."

2. A report of a subcommittee to Study Recommendations for Qualifications of Opticians was approved.

This report read as follows:

"The committee has studied the question of qualifications for dispensing opticians and has agreed on the following:

a. Ophthalmologists must depend upon their dispensing opticians to maintain a high quality of merchandise and workmanship for their patients. Vigilance in the caliber and training of the personnel certified for this work is necessary.

b. Improvements in the education of opticians is necessary but recent efforts of some groups to limit dispensing to optometrists seem motivated by selfish interests. It is not necessary or desirable that dispensing opticians be qualified as refractionists.

c. The American Board of Opticianry is to be commended for the educational program which they have established and that the activities of the certifying body should be fostered and encouraged."

3. A paper on contact lenses prepared by Dr. Nugent of Los Angeles was approved. The paper has been accepted for publication in *Today's Health.*

4. A subcommittee (Drs. Swan and Burian) on the Influence of Ultraviolet Light upon Dark Adaptation submitted a report which was accepted. Its conclusion read:

"It is evident from the above conflicting data that it is not possible to give an all conclusive report on the influence of ultraviolet on dark adaptation at this time; however, there is substantial evidence that ultraviolet light under ordinary visual conditions does not reach the retina in sufficient amounts to significiantly affect dark adaptation."

5. A subcommittee was appointed which will make specific recommendations as to the best methods of screening of school children for visual defects. To work out an authoritative statement the following subcommittee was appointed: Chairman: Dr. Imus; Dr. Ogle, Dr. Foote, Dr. Crane, and Dr. Sloan.

6. A subcommittee (Drs. Fonda, Ogle and Cowan) made a progress report concerning the Feinbloom doublet lens. This report was accepted at the Glacier Park meeting.

"The field of vision of the Feinbloom telescopic lens was not found to be any greater than that of the Kollmorgen lens. The Feinbloom lens was found to be lighter and easier to handle. The lens was not found to have an aspheric surface as claimed. At present about 65 per cent of the doublet lenses prescribed have been successful. A final and complete report will be made in September 1954."

7. A subcommittee (Drs. Imus, Ogle, Culler, and Blackwell) on the Study of Tinted Optical Media submitted a report which was

accepted and of which the following is a summary:

a. Inasmuch as any reduction in the amount of light reaching the eye at low levels of illumination reduces visual function, and especially detection of distance, it is recommended that no filters of any type be interposed between the eye of the diver of the car and the road. This is to apply to so-called night driving lenses and to colored windshields.

b. It is recommended that only clear glass be used in automobile windshields. It is believed that manufacturers should be encouraged to use clear heat-absorbing glass which absorbs only the infra-red and allows all visible light to pass through.

8. A subcommittee to Review Lighting Sandards (Dr. Berens, Chairman; Dr. Fonda, Mr. Crouch and Dean Farnsworth) recommended the following, which were approved:

RECOMMENDED BRIGHTNESS FOR VISUAL TASKS

Occupation	*Recommended Footcandles & ACOVP*
Reading good sized print (10 to 11 point)	20
Drafting	30-50
Sewing (depending on color, contrast, fineness of work, etc.)	30-200
Locker Rooms and Toilets	10
Auditoriums	10
Stairs	10
Corridors	5-10
Classrooms	30
Blackboards and Charts	30-50

9. The report of the subcommittee for Determination of the Extent of Impairment of Vision for Industrial Use was presented by the chairman, Dr. Hughes. Other members of the committee are Dr. Spaeth and Dr. Fralick.

This committee was appointed by the Council on Industrial Health of the American Medical Association to revise the appraisal of loss of visual efficiency which had been adopted by the House of Delegates of the American Medical Association in 1940. The following is a summary of the major changes recommended by the committee:

a. Central Visual Acuity. The designation of visual acuity shall follow the recommendations of the Subcommittee of the American Committee on Optics and Visual Physiology on the problem of an international nomenclature for designating visual acuity (Ogle, K.N., Am. J. Ophth., 36:909, 1953), in which the gradation of the size of letters in the test lines conformed to a geometric scale. The best central visual acuity obtainable with ophthalmic lenses or contact lenses which can be tolerated by the individual with reasonable comfort for periods of eight hours or longer shall be used in determining the degree of visual acuity. If aphakia is present as a result of an injury, either directly or as a result of secondary surgery, the central visual acuity obtained in that eye either with an ophthalmic lens or contact lens will be used in the calculation of visual efficiency. Comment was made that no scientific studies are available relating central visual acuity, visual fields and motility deficiencies to the actual performance of various duties. The Committee felt that the previous tables of loss of visual efficiency overestimated the degree of loss for visual acuities less than 20/200 and underestimated the loss of reading for near acuities less than 14/28, Jaeger 3 or 6 point type, necessary for normal reading. Revised tables represented an effort to relate more closely visual acuity and visual disability in the light of experience. Because of the importance of good near vision in the performance of work, the revised table weighted this disability more heavily than the 1940 A.M.A. table. Calculation of the percentage of central visual efficiency for both distance and near vision would be calculated as an average of the two percentages.

b. Ocular Motility. Dependence of visual efficiency upon function of the extraocular muscles was considered to involve two major factors: (1) the absence of diplopia and (2) stereopsis. Except on looking downward, it was considered doubtful whether diplopia causes significant visual disability unless it is present within 30 degrees of the center of fixation. A new diplopia field chart was devised which weighted the loss of motility function centrally and below. If the patient has lost stereopsis as a result of disease or injury and, because of suppression, diplopia is not present, the amount of compensation will depend upon the dependence of the individual upon stereopsis for the performance of his work. Loss of stereopsis without other ocular abnormalities shall not exceed 50 per cent loss of visual efficiency of one eye.

c. Visual fields were determined by the usual methods, utilizing a 3/330 white test object under illumination of not less than seven footcandles for aphakia, and a 6/330 white test object for uncorrected aphakia. The limits of the normal visual field were changed slightly along the lines recommended by Traquair. Minor changes were made in the estimation of percentage of visual

field loss. Although the extent of loss of visual field efficiency cannot be determined accurately for ring scotoma, an approximation was recommended by considering the width of the ring scotoma to be equivalent to loss of peripheral visual field. A similar estimation of visual field loss was applied to enlargement of the blind spot utilizing a 2/1000 white test object.

d. No change in the calculation of visual efficiency of one eye, or of calculation of binocular visual efficiency.

e. Regulations for Computing Compensation. Compensation shall not be computed until all adequate and reasonable operations and treatment known to medical science have been attempted to correct the defect. Such ocular defects would include corneal opacification, cataract, retinal detachment, and paresis of an extraocular muscle. If the ophthalmologist considers that such defects are remediable by established methods of treatment, such as corneal transplantation, cataract extraction, operation for retinal detachment or correction of paralytic strabismus respectively, and the patient refuses treatment, then two additional consulting ophthalmologists will be called in on such a case. The patient is to designate one of these, and the Workman's Compensation Board or Referee the other. Such consultants must have a minimum qualification of the certificate of the American Board of Ophthalmology. If these two consultants agree that treatment or surgery is indicated, they will designate the ophthalmologist to perform such treatment or surgery. If the patient still refuses treatment, the case will be closed on the basis of 100 per cent visual efficiency for the eye or eyes recommended for treatment. If the two consultants cannot agree on a proposed treatment, the patient will be awarded compensation according to the remaining visual efficiency as calculated in Section VI. Estimation of the final visual efficiency shall not be made until six months have elapsed after surgery.

The committee accepted Dr. Hughes' report and advised that it be sent to the American Medical Association. If approved, the report will be sent out as an official expression of the American Medical Association.

10. The following statement was prepared regarding the examination of individuals for blind pensions. This statement is to be submitted to the Interprofessional Committee on Eye Care and to be sent to Drs. Gunderson and Lull of the American Medical Asociation.

"The American Committee on Optics and Visual Physiology believes it inadvisable for optometrists to examine patients for blind pensions because optometrists are not qualified by training to diagnose ocular disease nor to decide which cases are amenable to treatment or to give a prognosis."

11. The resignation of Dr. Lawrence T. Post from the American Committee on Optics and Visual Physiology was accepted with deep regret. Dr. Post served for a number of years with great distinction.

12. By means of a letter, recognition was given to the important contribution of Dr. Paul Boeder, who advanced the knowledge of physiologic optics through his excellent translation of the book by Tschermak. Dr. Boeder made this translation at the suggestion of the American Committee on Optics and Visual Physiology and the book has been published under its sponsorship. Copies are available for purchase.

13. The Committee discussed the work of the Better Vision Institute. It was the opinion of the committee that ophthalmologists should cooperate with this Institute. By so doing, they would influence data released for the public.

14. Three new subcommittees were appointed. A subcommittee was appointed to make recommendations concerning visual standards for applicants of motor vehicle operator's permits. This committee will consist of Dr. Hermann Burian, Chairman; Henry Imus and William F. Hughes. New committees were also appointed for the standardization of terminology. The terminology for motor anomalies will be revised by Drs. Swan and Burian. Terminology for Optics and Visual Physiology report will be prepared by Drs. Ogle, Imus, and Fonda.

15. Your committee respectfully recommends:

a. That the American Academy of Ophthalmology and Otolaryngology continue its sponsorship of the American Committee on Optics and Visual Physiology.

b. That the American Academy of Ophthalmology and Otolaryngology support the committee in an amount of $150.00.

c. That Dr. Kenneth C. Swan be reappointed.

REPORT OF THE AMERICAN ORTHOPTIC COUNCIL

WILLIAM E. KREWSON, III, M.D.,
FRANK D. COSTENBADER, M.D. and
PHILIP KNAPP, M.D.
Academy Representatives

The nineteenth annual meeting of the American Orthoptic Council was held in Chicago on October 10, 1953, Dr. Walter Fink, President, presiding. The actions of the Council and its subsequent actions are listed below.

The American Academy of Ophthalmology and Otolaryngology was represented by Dr. Kenneth Swan, Dr. Wiliam Krewson and Dr. Frank Costenbader. During the year 1954, Dr. Krewson has served on the Committee on Instruction, and Dr. Costenbader has served as Secretary-Treasurer of the Council, Chairman of the Committee on Examination, and as a member of the Committee on advanced certification and the Special committee on orthoptic practice. Dr. Swan was appointed Chairman of the Committee on advanced certification, but due to other commitments found it necessary to resign from the Council. Dr. Knapp was nominated by the Council to replace Dr. Swan, and was appointed by the American Academy of Ophthalmology and Otolaryngology for a three-year term.

During the year the Council has felt deeply the loss of Dr. LeGrand H. Hardy. Dr. Hardy was the founder of the American Orthoptic Council, an almost continuous member of the Council, and its constant source of inspiration. His absence will continue to be deeply felt.

The significant activities of the American Orthoptic Council for the year have been:

1. The continuation of the annual two-month intensive basic course for orthoptic technicians. This was held in Iowa City during the summer of 1954, directed by Dr. Hermann Burian, and several members of the American Orthoptic Council acted as instructors. It should be pointed out that the proper training of adequate numbers of orthoptic technicians continues to be a problem.

2. The annual examination of orthoptic technicians was held by the Council in October 1953. Twenty-nine of 36 candidates obtained a passing grade and were certified by the Council.

3. The annual symposium sponsored by the American Orthoptic Council and the American Association of Orthoptic Technicians was held in October 1953. The subject, "Accommodative Esotropia," was discussed by Dr. Marshall M. Parks, Dr. Frank D. Costenbader, Miss Aleatha Tibbs, and Mrs. Louisa Kramer. Many listeners had to be turned away because of the large crowd and inadequate facilities.

4. Of special interest is the acceptance of the report of a special committee on orthoptic practice by the Council. This report recommends more careful regulations and supervision of the "practice of orthoptics," having fully in mind the welfare of the orthoptic technician and of the medical profession.

5. The American Association of Orthoptic Technicians reports that all of its four regional section meetings were well attended and enthusiastically received. In addition, the Association presented an exhibit at the Academy on accommodative esotropia. This was well prepared and correlated with the symposium mentioned above.

6. The instruction courses for orthoptic technicians presented at the time of the Academy and given by technicians and ophthalmologists were oversubscribed. It is the hope of the Council to sponsor additional courses as a means of further graduate education for the technicians.

7. Under the editorship of Dr. Hermann Burian, the fourth issue of the American Orthoptic Journal is now ready for distribution. This increasingly satisfying journal is made possible through the efforts of the editorial staff, composed both of technicians and ophthalmologists, and through the courtesy and material aid of the Transactions of the Academy.

All officers of the year 1953 were elected to serve again in 1954. They are:

President: Dr. Walter M. Fink of Minneapolis

Vice-President: Dr. Hermann Burian of Iowa City

Secretary-Treasurer: Dr. Frank D. Costenbader of Washington, D. C.

The American Orthoptic Council is appreciative of the continued interest and support of the American Academy of Ophthalmology and Otolaryngology.

Your committee respectfully recommends:

1. That the American Academy of Ophthalmology and Otolaryngology continue its sponsorship of the American Orthoptic Council and that it appoint Dr. John Woodworth Henderson of Ann Arbor, Michigan, to replace Dr. William Krewson, for a term of three years, beginning January 1, 1955.

2. That the American Academy of Ophthalmology and Otolaryngology continue its financial support of the American Orthoptic Council in the amount of $100.00 for the year 1954-1955.

REPORT OF JOINT COMMITTEE ON INDUSTRIAL OPHTHALMOLOGY

A. D. RUEDEMANN, SR., M.D., Chairman

The Joint Committee on Industrial Ophthalmology through the past year has continued its program, originally designed to serve the interest of all parties concerned with industrial eye problems. In order to do this, the Committee has kept, and is keeping, itself informed of:

1. Old and new hazards to eyes and industry (including occupations not always listed as industrial); technics of handling emergency eye injuries in plants; technics developed for ophthalmologists in handling eye injuries; studies of continuing appraisal and evaluation of visual testing technics.

2. Maintaining a continuing bibliography on industrial eye problems available to anyone interested, and which is published at intervals in TRANSACTIONS of the American Academy of Ophthalmology and Otolaryngology.

3. Receiving requests for information on all types of eye problems, which are either answered on the basis of information already in the files of the Joint Committee, or the information is procured, or the original request is referred to an authority on the specific problem involved.

4. Sets of kodachrome slides of eye injuries have been set up:

a. One set has been duplicated and is in use throughout the state of Maryland. It is owned by the Maryland Society for the Prevention of Blindness, and accompanies a tape recording and discussion of industrial eye problems. This was prepared by one member of the Committee.

b. Another set of kodachromes has been turned over to the Kettering Institute in Cincinnati for use by their Consulting Staff, and by ophthalmologists in Cincinnati.

c. Another set has been turned over to the Standard Oil Company, and it is being used throughout the plants very effectively following the "Let's Pretend" program, which consists of everyone in a small audience being blindfolded and required to do some of the everyday things of life without seeing. This is so popular and effective that every industry in the Calumet area is asking for slides, securing them, and using them for this purpose.

5. The Joint Committee will have an exhibit on "Industrial Eye Problems" in September at both the International Congress of Ophthalmology and the American Academy of Ophthalmology and Otolaryngology in New York City. This exhibit will include:

a. The physiology and pathology of chemical eye burns. (Prepared by Dr. James Allen, using drawings and actual kodachrome photographs.)

b. Protective equipment designed to prevent eye injuries.

c. Wise Owl Club program.

d. Presentation of various ways in which ophthalmic medication can be kept sterile for use on eye trays in industry.

6. The Joint Committee has been asked repeatedly to work out pros and cons of glaucoma detection in industry, and is keeping in close touch with all groups working on mass testing.

7. Continuing vigilance is maintained with reference to use and abuse of tinted optical media for various purposes.

8. Cooperation with the Legal Committee of the Pan-American Association of Ophthalmology.

9. One Committee member, Dr. E. B. Spaeth, assigned to the Subcommittee working with the American Medical Association seeking the revision of the A.M.A. formula to "Estimate Per cent Loss of Visual Efficiency" has been working steadily but is not yet ready to report. The revision has been badly needed, and will be a real contribution.

Inasmuch as the Committee has not had a grant from the American Medical Association, the Council on Industrial Health of the A.M.A., or the American Academy of Ophthalmology and Otolaryngology, the financial account was closed in October 1953, and there is no financial report to be given.

PAST OFFICERS OF THE ACADEMY

Date	President	First Vice-President	Treasurer	Secretary	Meeting Place
1896	Adolph Alt St. Louis, Mo.	W. C. Pipino Des Moines, Iowa	W. L. Dayton Lincoln, Neb.	Hal Foster Kansas City, Mo.	Kansas City
1897	Adolph Alt St. Louis, Mo.	W. C. Pipino Des Moines, Iowa	W. L. Dayton Lincoln, Neb.	Hal Foster Kansas City, Mo.	St. Louis
1898	B. E. Fryer Kansas City, Mo.	J. E. Colburn Chicago, Ill.	W. L. Dayton Lincoln, Neb.	Hal Foster Kansas City, Mo.	Chicago
1899	J. E. Colburn Chicago, Ill.	W. Scheppegrell St. Louis, Mo.	W. L. Dayton Lincoln, Neb.	Thomas A. Woodruff Chicago, Ill.	New Orleans
1900	W. Scheppegrell St. Louis, Mo.	M. A. Goldstein St. Louis, Mo.	W. L. Dayton Lincoln, Neb.	Fayette C. Ewing St. Louis, Mo.	St. Louis
1901	M. A. Goldstein St. Louis, Mo.	H. W. Wurdemann Milwaukee, Wis.	W. L. Dayton Lincoln, Neb.	W. L. Ballenger Chicago, Ill.	Cincinnati
1902	C. R. Holmes Cincinnati, Ohio	W. L. Dayton Lincoln, Neb.	Otto Stein Chicago, Ill.	W. L. Ballenger Chicago, Ill.	Chicago
1903	W. L. Ballenger Chicago, Ill.	C. J. Stillson Indianapolis, Ind.	Otto Stein Chicago, Ill.	Derrick Vail Cincinnati, Ohio	Indianapolis
1904	Edward Jackson Denver, Colo.	Dudley Reynolds Louisville, Ky.	Otto Stein Chicago, Ill.	Derrick Vail Cincinnati, Ohio	Denver
1905	Hanau Loeb St. Louis, Mo.	Derrick Vail Cincinnati, Ohio	Otto Stein Chicago, Ill.	George F. Suker Chicago, Ill.	Buffalo
1906	Casey Wood Chicago, Ill.	J. A. Stucky Lexington, Ky.	Otto Stein Chicago, Ill.	George F. Suker Chicago, Ill.	St. Clair

PAST OFFICERS OF THE ACADEMY

Date	President	First Vice-President	Treasurer	Secretary	Meeting Place
1907	J. A. Stucky Lexington, Ky.	R. A. Reeve Toronto, Canada	Otto Stein Chicago, Ill.	George F. Suker Chicago, Ill.	Louisville
1908	Derrick Vail Cincinnati, Ohio	Joseph Beck Chicago, Ill.	Otto Stein Chicago, Ill.	George F. Suker Chicago, Ill.	Cleveland
1909	Otto Stein Chicago, Ill.	Percy Fridenberg New York, N. Y.	S. H. Large Cleveland, Ohio	George F. Suker Chicago, Ill.	New York
1910	Wendell Reber Philadelphia, Pa.	L. B. Lockhard Denver, Colo.	S. H. Large Cleveland, Ohio	George F. Suker Chicago, Ill.	Cincinnati
1911	J. J. Kyle Indianapolis, Ind.	F. Parke Lewis Buffalo, N. Y.	S. H. Large Cleveland, Ohio	George F. Suker Chicago, Ill.	Indianapolis
1912	George F. Suker Chicago, Ill.	J. W. Murphy Cincinnati, Ohio	S. H. Large Cleveland, Ohio	L. M. Francis Buffalo, N. Y.	Niagara Falls, Ont.
1913	J. W. Murphy Cincinnati, Ohio	J. O. McReynolds Dallas, Texas	S. H. Large Cleveland, Ohio	L. M. Francis Buffalo, N. Y.	Chattanooga
1914	J. M. Ray Louisville, Ky.	J. M. Ingersoll Cleveland, Ohio	S. H. Large Cleveland, Ohio	L. M. Francis Buffalo, N. Y.	Boston
1915	Joseph Beck Chicago, Ill.	Robert S. Lamb Washington, D.C.	S. H. Large Cleveland, Ohio	L. M. Francis Buffalo, N. Y.	Chicago
1916	J. E. Brown Columbus, Ohio	T. E. Carmody Denver, Colo.	S. H. Large Cleveland, Ohio	L. M. Francis Buffalo, N. Y.	Memphis
1917	W. L. Dayton Lincoln, Neb.	Edward Stieren Pittsburgh, Pa.	S. H. Large Cleveland, Ohio	L. M. Francis Buffalo, N. Y.	Pittsburgh
1918	Allen Greenwood Boston, Mass.	Virginius Dabney Washington, D.C.	S. H. Large Cleveland, Ohio	L. M. Francis Buffalo, N. Y.	Denver

PAST OFFICERS OF THE ACADEMY

Date	President	First Vice-President	Treasurer	Secretary	Meeting Place
1919—	J. M. Ingersoll Cleveland, Ohio	Melville M. Black Denver, Colo.	S. H. Large Cleveland, Ohio	Luther C. Peter Philadelphia, Pa.	Cleveland
1920—	L. M. Francis Buffalo, N. Y.	Hal Foster Kansas City, Mo.	S. H. Large Cleveland, Ohio	Luther C. Peter Philadelphia, Pa.	Kansas City
1921—	Emil Mayer New York, N. Y.	John R. Newcomb Indianapolis, Ind.	S. H. Large Cleveland, Ohio	Luther C. Peter Philadelphia, Pa.	Philadelphia
1922—	Walter R. Parker Detroit, Mich.	Ross H. Skillern Philadelphia, Pa.	S. H. Large Cleveland, Ohio	Luther C. Peter Philadelphia, Pa.	Minneapolis and St. Paul
1923—	T. E. Carmody Denver, Colo.	Hunter H. McGuire Winchester, Va.	S. H. Large Cleveland, Ohio	Luther C. Peter Philadelphia, Pa.	Washington, D. C.
1924—	W. B. Lancaster Boston, Mass.	William P. Wherry Omaha, Neb.	S. H. Large Cleveland, Ohio	Luther C. Peter Philadelphia, Pa.	Montreal
1925—	Horace Newhart Minneapolis, Minn.	John M. Wheeler New York, N. Y.	S. H. Large Cleveland, Ohio	Luther C. Peter Philadelphia, Pa.	Chicago
1926—	E. C. Ellett Memphis, Tenn.	Austin A. Hayden Chicago, Ill.	S. H. Large Cleveland, Ohio	Luther C. Peter Philadelphia, Pa.	Colorado Springs
1927—	Ross Hall Skillern Philadelphia, Pa.	H. W. Woodruff Joliet, Ill.	S. H. Large Cleveland, Ohio	William P. Wherry Omaha, Neb.	Detroit
1928—	Luther C. Peter Philadelphia, Pa.	Frank L. Dennis Colorado Springs, Colo.	S. H. Large Cleveland, Ohio	William P. Wherry Omaha, Neb.	St. Louis
1929—	Harris P. Mosher Boston, Mass.	Frank E. Burch St. Paul, Minn.	S. H. Large Cleveland, Ohio	William P. Wherry Omaha, Neb.	Atlantic City
1930—	William H. Wilder Chicago, Ill.	Frank R. Spencer Boulder, Colo.	S. H. Large Cleveland, Ohio	William P. Wherry Omaha, Neb.	Chicago

PAST OFFICERS OF THE ACADEMY

Date	President	First Vice-President	Ex. Sec'y-Treas.	Comptroller	Meeting Place
1931—	John F. Barnhill Miami Beach, Fla.	Meyer Wiener Coronado, Calif.	William P. Wherry Omaha, Neb.	S. H. Large Cleveland, Ohio	French Lick, Ind.
1932—	S. Hanford McKee Montreal, Canada	Gordon B. New Rochester, Minn.	William P. Wherry Omaha, Neb.	S. H. Large Cleveland, Ohio	Montreal
1933—	Burt R. Shurly Detroit, Mich.	Nelson Miles Black Miami, Fla.	William P. Wherry Omaha, Neb.	S. H. Large Cleveland, Ohio	Boston
1934—	John M. Wheeler New York, N. Y.	LeRoy A. Schall Boston, Mass.	William P. Wherry Omaha, Neb.	S. H. Large Cleveland, Ohio	Chicago
1935—	Wells P. Eagleton Newark, N. J.	W. Thornwall Davis Washington, D.C.	William P. Wherry Omaha, Neb.	S. H. Large Cleveland, Ohio	Cincinnati
1936—	Frank E. Burch St. Paul, Minn.	Gordon F. Harkness Davenport, Iowa	William P. Wherry Omaha, Neb.	S. H. Large Cleveland, Ohio	New York
1937—	Lee W. Dean St. Louis, Mo.	Bernard Samuels New York, N. Y.	William P. Wherry Omaha, Neb.	S. H. Large Cleveland, Ohio	Chicago
1938—	Harry S. Gradle Chicago, Ill.	E. M. Seydell Wichita, Kan.	William P. Wherry Omaha, Neb.	S. H. Large Cleveland, Ohio	Washington, D. C.
1939—	George M. Coates Philadelphia, Pa.	William W. Pearson Des Moines, Iowa	William P. Wherry Omaha, Neb.	S. H. Large Cleveland, Ohio	Chicago
1940—	Frank E. Brawley Chicago, Ill.	Arthur W. Proetz St. Louis, Mo.	William P. Wherry Omaha, Neb.	S. H. Large Cleveland, Ohio	Cleveland
1941—	Frank R. Spencer Boulder, Colo.	Everett L. Goar Houston, Texas	William P. Wherry Omaha, Neb.	S. H. Large Cleveland, Ohio	Chicago
1942—	Ralph I. Lloyd Brooklyn, N. Y.	Walter H. Theobald Chicago, Ill.	William L. Benedict Rochester, Minn.	S. H. Large Cleveland, Ohio	Chicago
1943—	James A. Babbitt Philadelphia, Pa.	Sanford R. Gifford Chicago, Ill.	William L. Benedict Rochester, Minn.	S. H. Large Cleveland, Ohio	Chicago

PAST OFFICERS OF THE ACADEMY

Date	President	First Vice-President	Ex. Sec'y-Treas.	Meeting Place
1944	Lawrence T. Post St. Louis, Mo.	C. Stewart Nash Rochester, N. Y.	William L. Benedict Rochester, Minn.	Chicago
1945	Gordon B. New Rochester, Minn.	Edmund B. Spaeth Philadelphia, Pa.	William L. Benedict Rochester, Minn.	Meeting Cancelled
1946	Gordon B. New Rochester, Minn.	Edmund B. Spaeth Philadelphia, Pa.	William L. Benedict Rochester, Minn.	Chicago
1947	Alan C. Woods Baltimore, Md.	Arthur C. Jones Boise, Idaho	William L. Benedict Rochester, Minn.	Chicago
1948	Carl H. McCaskey Indianapolis, Ind.	Ralph O. Rychener Memphis, Tenn.	William L. Benedict Rochester, Minn.	Chicago
1949	Conrad Berens New York, N. Y.	Fred W. Dixon Cleveland, Ohio	William L. Benedict Rochester, Minn.	Chicago
1950	J. Mackenzie Brown Los Angeles, Calif.	Edwin B. Dunphy Boston, Mass.	William L. Benedict Rochester, Minn.	Chicago
1951	Derrick Vail Chicago, Ill.	Francis E. LeJeune New Orleans, La.	William L. Benedict Rochester, Minn.	Chicago
1952	James Milton Robb Detroit, Mich.	Georgiana Dvorak Theobald Oak Park, Ill.	William L. Benedict Rochester, Minn.	Chicago
1953	Frederick C. Cordes San Francisco, Calif.	Thomas C. Galloway Evanston, Ill.	William Benedict Rochester, Minn.	Chicago
1954	Walter H. Theobald Chicago, Ill.	Francis Heed Adler Philadelphia, Pa.	William L. Benedict Rochester, Minn.	New York

SPECIAL TECHNICS IN TRAUMATIC EYE SURGERY

EDMUND B. SPAETH, M.D.
PHILADELPHIA, PA.

IN considering this portion of our symposium this evening, the title "Special Technics in Traumatic Eye Surgery" will be adhered to rather sharply. Some of the technics to be discussed apply to lid lacerations, others to injuries to the globe, and others to thermal and chemical traumatisms. Roentgen examinations in cases of foreign bodies will be considered as well, not in general but with specific relationships.

FIG. 1—Primary closure of lacerated lacrimal canaliculus.

LID LACERATIONS

Lacerations result from a variety of causative factors. Some may be from explosions, with retention of one or more foreign bodies; others, extensive lacerations from glass and metal missiles; and others, the accompaniment of more extensive bone and facial injuries.

Figure 1 illustrates the first of these special technics. Specifically, it is the restoration of the lacrimal drainage after traumatic section. It is a most necessary operation. Figure 2 illustrates two cases similar in etiology, but in these secondary repair and reconstruction were necessary.

FIG. 2—Secondary closure of lacerated lacrimal canaliculus in two cases. A and B, left eye; C and D, right eye.

Fresh lacerations and incised wounds which cross or cut the canaliculi will result in good lacrimal function if corrected promptly and correctly. The intact punctum is dilated and a no. 2 silver Bowman probe passed through the punctum and into the canaliculus so that the tip of the probe projects from the cut end of the canaliculus. This tip is passed into the cut end (fixed end) of the canaliculus using the probe as a handle, and thence into the sac and the lacrimal-nasal duct. It is wasted time to look for the cut end otherwise. Accurate anatomical approximation will permit the introduction of the tip of the probe into the sac unless tissues have been terribly contused. Even then one can find the sac with a bit of patience. While the probe is in position, three sutures are placed for later tying: the first, upon the posterior conjunctival surface, bridging the lid margin laceration; the second, similarly upon the skin surface; the third, placed as a mattress suture through and through the lid substance from the posterior surface for-

Presented at the Special Program of the Joint Committee on Industrial Ophthalmology at the Fifty-Eighth Annual Session of the American Academy of Ophthalmology and Otolaryngology, Oct. 11-16, 1953, Chicago, Ill.

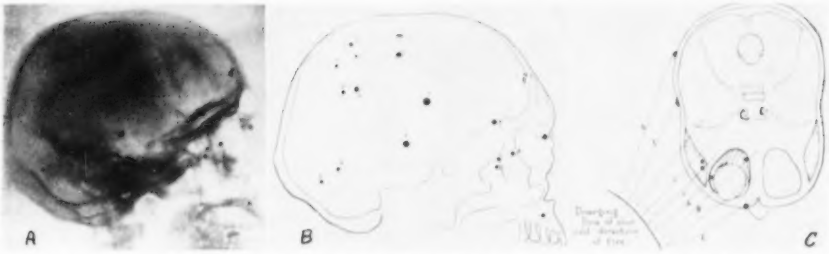

FIG. 3—A, flat plate, lateral view, of shotgun accident; B, sketch of same view; C, sketch of anterior-posterior flat view.

ward, the bight of this suture bridging the laceration immediately below the lid margin at the canaliculus. Before these are tied, the tissues upon the probe are again threaded together in close approximation, and the probe is then bent upon itself downward sharply so that the right angle lies in the sac itself. A second bend is then made in the probe at the point of exit from the punctum in a second right angle. This probe is then cut with wire cutters about 1 cm. from its point of exit at the punctum. The projecting end is bent further upon itself into a smooth curve to lie upon the lid surface. In this manner the probe will be retained horizontally within the canaliculus without convexity or concavity, hence the canaliculus will not be destroyed by pressure necrosis. The sutures may now be tied; the mattress suture first, then the other two. The probe is to be permitted to remain in position for several weeks, or several months if necessary. It can be withdrawn at any time, and reintroduced if necessary to obtain complete recovery of the lacrimal canaliculus.

Old lacerations with cicatricial contractures after primary healing, without primary repair are treated in the same manner. In these the cicatrix is first resected, however, converting the wound into the primary laceration, then proceeding as above.

In both instances any other necessary plastic surgery for the lid repair can be done after this anastomosis has been completed.

It is quite possible that plastic tubing, probes of acrylic plastic, and other formed stylettes are equally as satisfactory as the silver wire or silver probes described. The author, however, has not found it necessary to change from the wire to the plastic.

EXTRAOCULAR FOREIGN BODIES

The next subject is a discussion of special technics as these apply to extraocular foreign bodies. Figure 3 illustrates a case of shotgun injury at rather close range. The eyeball itself was not injured, fortunately. A group of five lead pellets were in the region of the orbit. It was rather desirable to know the position of these foreign bodies, if possible. The value of flat x-ray plates in a case wherein lateral views taken at right angles to each other in horizontal and in vertical planes are of greatest value is demonstrated by figure 3, A. Without them, the task of deciding which of these foreign bodies lie inside and which outside the orbit and whether any are inside the globe resembles, in extent of computations necessary, that needed in studying an astronomical photographic plate. The flat films taken at the varying angles in the two plates, however, showed rotation movements of the foreign bodies in relationship to each other and to the various fixed anatomical landmarks. It was thus possible to de-

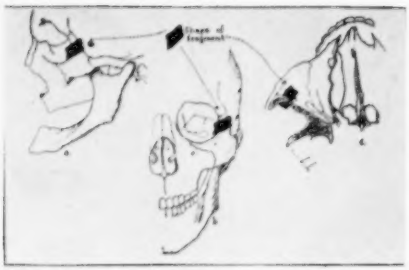

FIG. 4—Sketches made from a study of stereoscopic films, showing foreign body lying partly within the orbit.

cide that of the four bodies in the region of the orbit (see figure 3, B and C), A lay intraorbital immediately behind the rim of the orbit, B within the orbit at the medial angle and the roof of the orbit, and C and D in close relationship to each other below the zygoma and within the temporal fossa. The deformation of the various shot (E and F as compared with G, C and D) shows well the lines of fire resulting in the deformity and fragmentation of the first two (figure 3, C). This has not occurred in the last three. Apparently G struck the bones of the skull at a very tangential angle, E became fragmented against the solid bones of the frontal plate and the F's were deformed because of their almost perpendicular incidence. A, B, C and D show but little change in shape because their entry was into the softer tissues of the orbit or the thick temporal muscle, which cushioned the blow or force of impact. It is quite evident that in this case stereoscopic films would have been of much less value for orbital localization.

Figure 4 illustrates a case, however, in which anteroposterior stereoscopic views are of the greatest assistance. The foreign body lies, very probably, partly in and partly out of the orbit. Removal might be done through the temporal fossa or from an orbital approach. Or a transcranial approach might even be considered (similar to a Naffziger orbital decompression); this would be considered more seriously, perhaps, in cases in which the foreign body lies more superior and posterior. The patient was operated on successfully through the external route by a Shugrue bone resection, on the bases of these stereoscopic roentgenograms. A Krönlein resection, necessary otherwise, would have meant more extensive surgery with no better and perhaps even poorer results. The position of the foreign body would have limited the external bone flap, with danger to an eye already damaged by the original injury; also the degree of scar tissue in the orbit would have made that procedure rather more formidable.

FIG. 5—Illustrations of a severely lacerated upper and lower lid, with the anterior segment of the eyeball entirely lost. A, a retouched snapshot taken by an intern; C, the end result, with an artificial eye on right.

THE LACERATED LID MARGIN

The next subject to be discussed is that of closing, either as a primary or as a secondary procedure, a lacerated lid margin. Before considering this, one should review, very briefly, the significant anatomy of the case. This will include a review of the orbicularis muscle; the effective line of pull of the levator

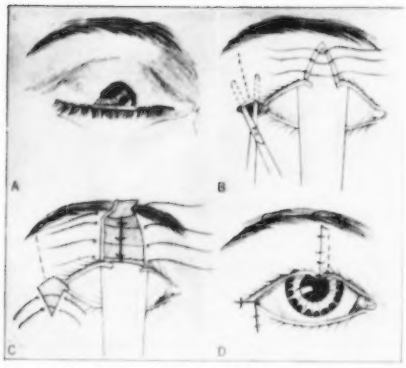

FIG. 6—The Wheeler halving operation.

muscle and its two lateral horns; and the internal and external canthal ligament. These represent lines of force which tend to widen lacerations. Because of them, lid lacerations must be closed, always, in anatomic layers. Figure 5 illustrates an extensive laceration of the upper and lower lid and of the eyeball, to illustrate the point. The technic of the Wheeler halving operation is illustrated in figure 6. These two cases emphasize this matter of closing an upper lid in layers and the manner of preventing lid notching by the formation of two tiny "nubbins" of tarsal cartilage at the lid margin, so that when the tarsal plate and the conjunctiva are closed together these "nubbins" will pout out into a little tubercle in the incision line. Frequently this pouting continues after healing. If so, it is a simple thing to wipe off the excess with a Ziegler cautery point. An elliptical closure of the skin surface, frequently recommended as sufficient to prevent notching, will not prevent it if the tarsus itself has been lacerated; and if it has not been lacerated, that is not necessary (fig. 7).

FIG. 7—Closure of primary vertical lid laceration.

FIG. 8—Closure of secondary vertical lid laceration.

Vertical lacerations, as illustrated in figure 7 as a primary situation and in figure 8 as a secondary situation, should be broken up so that the laceration is closed in a zigzag manner, or an oblique manner, preventing the development of a scar perpendicular to the lid margin. This can be achieved either in a primary or secondary closure (fig. 9, F) by supporting the new line of closure with flaps and "Z" plastics to break up the perpendicular scar.

FIG. 9—Photograph: ..... sketches to illustrate secondary closure through the utilization of supporting flaps to break up perpendicular cicatrices.

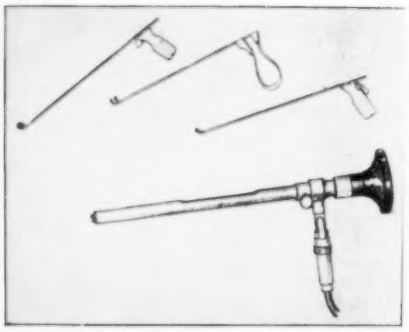

FIG. 10—Thorpe endoscope.

Attention to the skin alone is, however, rather unsatisfactory. The structures basal to the skin are more important. Hence the orbicularis fibers, especially near the canthal angles, and the orbital septum must be closed in anatomic layers. When repairing the upper lid it is absolutely necessary to close horizontal rents in the levator tendon, the aponeurosis and in the lateral horns.

NONMAGNETIC INTRAOCULAR FOREIGN BODIES

Nonmagnetic intraocular foreign bodies merit a comment. The author does not like the biplane fluoroscope and will neither use or recommend it unless it is absolutely necessary. It is certainly not an instrument of choice for intraocular nonmagnetic foreign bodies. If the vitreous is clear but the lens opaque, his recommendation is the use of the endoscope of Thorpe. If the vitreous is clear and the pupillary aperture unobscured, then preference is for a posterior sclerectomy and foreign body extraction with direct observation through the pupillary aperture, using one of the special forceps devised by Thorpe (fig. 10). In those instances wherein a nonmagnetic foreign body is incarcerated in the retina or the choroid, accurate localization is to be obtained through the utilization of fixed radiopaque landmarks and the removal of the foreign body by a trap-door sclerotomy.

CHEMICAL AND THERMAL BURNS

Last is a brief consideration of special technics in traumatic eye surgery as these apply to chemical and thermal burns.

The late treatment of these conditions is definitely a separate problem. This was rather well covered in a symposium two years ago on traumatic surgery at the San Francisco meeting of the American College of Surgeons (1951).

Lime and ammonia are the alkalis most commonly responsible for these injuries. (The most common acids are probably the crude sulphuric and nitric acids.) Salts of calcium are insoluble and they produce destruction as a result of their hygroscopic activity. This activity continues inexorably as long as there is any alkali present for the formation of an albuminate with cellular substance. For that reason surgical resection and the use of early mucous membrane grafts continue as a most important and, in many instances, the most valuable means of treatment in many lime burns of moderate to medium degrees of severity.

Thermal burns have as a characteristic sharply outlined limits to their tissue loss. Tissue loss, however, is present. This is quite different when considering treatment, for instance, as compared to even an extensive laceration. Because of this, two methods of therapy are to be considered. In the loss of large amounts of lid substance one should seriously consider immediate suture of the remnants present to prevent lagophthalmos, corneal exposure and permanent corneal damage. The broad cicatrix which then forms can be handled later with deliberation as a secondary procedure. The other technic for consideration is the immediate utilization of skin grafts, mucous membrane grafts, and even grafts of cartilage combined with a pedicle flap to repair the defect, as a primary procedure. It is rather impossible to say arbitrarily which method should be utilized in any one case. The extent of the lesion, the age of the patient, the amount of accompanying extraocular injuries, and the presence of shock are the deciding factors.

Late Epiphora

Burns, chemical or thermal, at the inner canthal angle of the lower lid have special significance because of the subsequent epiphora. While a complete cul-de-sac recovery may occur in these instances, still the damage to the punctum (in structure or position) may be, no matter how slight, sufficient to cause intractable epiphora. This aspect of a chemical burn is too frequently slighted, though the punctum is miraculously spared in many of these instances. Cases have been seen in which epiphora is the sole sequela of the original accident, even the corneal scarring being minimal and without visual loss.

Active chemical neutralization is, of course, important, but it is quite possible that other forms of treatment are even more important. The immediate introduction of a short length of 000 chromic catgut through the punctum into the canaliculus is valuable. It will not irritate, as does a metallic probe or wire; in the presence of these badly damaged tissues, it stays sufficiently stiff for retention, and it will prevent closure of the external orifice of the punctum due to tissue necrosis and cicatrix. It can be replaced at any time, and each piece used will remain in place for ten days to two weeks.

Comment was made earlier herein relative to the value of early mucous membrane grafting. This recommended technic applies most significantly to those chemical burns which involve the inner canthal angle, predominately. The reason is to minimize as much as is possible this late intractable epiphora from damage to the lacrimal drainage apparatus.

An additional comment is indicated, in the consideration of these cases, as to late treatment for those which have gone on to stenotic or even closed puncti and/or canaliculi. In such, if there is not too much contracture from cicatrix in the inner canthal angle, a Stallard sac transplant will restore fair to good lacrimal drainage in a surprisingly large percentage of cases.

The author has had many successful results from the use of silver stylettes in cases with complete cicatricial closure. In two such primary closure cases (two successes in several attempts) the stylette was introduced directly through an inner canthal angle stab wound and thus passed into the sac and the lacrimal nasal duct. The exposed end of this stylette was bent upon itself in a smooth curve, hooking over the inner end of the palpebral fissure, and was permitted to remain indefinitely in position, being removed occasionally at month intervals for cleansing. Canalization occurs very slowly in such fistulas, even epithelization is slight, and it is probable that the

functioning which occurs is by capillary action along the sides of the stylette, if it is solid, or through its lumen, if it is hollow with perforations in the exposed portion. Both types have been used. In certain other cases, less severe, better results have been obtained from the same type of stylette passed through the stenosed punctum and/or canaliculus into the lacrimal nasal duct. It is rather likely in some of these cases that this stylette was passed through the former site of the punctum and canaliculus rather than through them, for they had been wholly destroyed. In these, also, such a stylette must be worn for a very long time, perhaps several months, to obtain the greatest permanent value. Roughly, the cure is complete when the stylette can be easily removed, and again reintroduced after a lapse of a few days without having been worn in the interim. This procedure is the author's arrangement, and patients are advised of this plan at an early period in this treatment.

CONCLUSION

An attempt has been made to outline a few procedures sufficiently exacting that they may merit the term "Special Technics in Traumatic Eye Surgery." These by no means exhaust the possibilities, probabilities and treatments related to this subject. They are, however, proven clinical procedures and therefore may be presented to you for consideration and utilization.

BACTERIAL INFECTIONS WITH REFERENCE TO TRAUMATIC EYE INJURIES: A BRIEF REVIEW

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INFECTION of the eye following trauma is dependent upon many factors. The location and severity of the injury, the bacterial flora of the eye and its adnexa at the time of injury, and contamination by the exciting or therapeutic agents are but a few of the important items which must be considered.

LOCATION AND SEVERITY OF INJURY

Severe lacerating injuries to the conjunctiva and eyelids rarely become infected, whereas relatively minor trauma to the cornea may result in gross infection. The anterior chamber seems to have much natural resistance to infection, whereas the vitreous has none.

A contused wound rarely becomes infected, but lacerating or perforating wounds, especially with retained intraocular foreign body, are all potentially infected. Burns are subject to secondary infection because the burned cornea loses its resistance to the increased flora of pathogenic organisms which occurs after the first twenty-four hours.

OCULAR FLORA

A. Normal Flora. The normal flora are innocuous under ordinary circumstances, the usual inhabitants being Corynebacteria xerosis and hoffmani, and nonpathogenic staphylococci.[27] Usually the effects of lysozyme and the mechanical action of the tears keep the number of contaminants low while allowing the nonpathogens to remain. This may be purposeful because staphylococci, and occasionally diphtheroids, in the eye flora are frequently antibiotic, producing organisms[11] which may inhibit pathogens.

B. Variations in Flora. Interference with lacrimal secretion or drainage allows luxuriant growth of normally nonpathogenic organisms, which then cause virulent infection following injury. The simple act of patching an eye favors increased growth of bacteria by diminishing the mechanical and enzymatic action of the tears and by raising the local temperature. Local infections of the adnexa add contaminants which become important following trauma.

Infection elsewhere, such as in the skin, respiratory system and intestines, may permit contamination of the ocular flora by pneumococci, streptococci, and Pseudomona aeruginosa.

Geographical location may vary the offending bacteria. On the West Coast, the Morax-Axenfeld organism[10] and hemolytic staphylococcus aureus are prominent in conjunctivitis. On the East Coast, the Koch-Weeks organism is common while nonhemolytic staphylococcus aureus is more predominant in the Midwest.[20] In Korean war wounds Pulaski[21] found heavy contamination with a mixture of bacteria. Numerous varieties of Clostridia, mostly of the proteolytic types, were found, while the Welchii and Tetani types were less prevalent. Hemolytic streptococci were generally found to be nonpathogenic, whereas pathogenic staphylococci were present in 22 per cent of wounds. Coliform bacilli were found in about one third of the cases and B. proteus and Ps. aeruginosa were more prevalent than usual.

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Occupational hazards may add to the prevalence and varieties of organisms causing post-traumatic ocular infection. Obviously a sewer or abattoir worker is exposed to infection more than an industrial machinist.

The multitude of organisms which may be introduced into the ocular tissues following trauma is evident. Infection is frequently due to a mixed flora of pathogenic bacteria and ordinarily nonpathogens.

CONTAMINATION BY THE EXCITING OR THERAPEUTIC AGENTS

Foreign bodies may carry with them pathogenic organisms whether they originate in industry or on the battlefield. The saprophyte B. subtilis, which is dust borne, has been responsible for virulent endophthalmitis occurring within six to twenty-four hours after injury to the globe.[5]

"Medical treatment" is a prevalent, though little publicized, means of introducing infection to a normal or injured eye. Unclean hands and improperly sterilized instruments are obvious fomites. Contamination frequently emanates from the "eye tray," whether it be supervised by a nurse in an immaculate "in-plant" emergency dispensary or by a corpsman in a battlefield aid station. Solution bottle and ointment tube contamination are less often recognized sources. Theodore,[24] McCulloch[18] and others[23] have emphasized that almost every known pathogenic bacteria can grow in any eye medicament. Ps. aeruginosa is the most dangerous contaminant, and it has been frequently cultured from solutions[25] (including sulfonamides).[1] The incidence of pseudomonas corneal ulcers following the removal of foreign bodies is well known. The spread of the virus of epidemic keratoconjunctivitis from solution contamination has also been proved.[26] The most common cause of solution contamination undoubtedly rests with the eye dropper bottle-top.[14] The eye dropper accidentally touches an infected eye and is replaced into its solution bottle, taking pathogenic organisms with it. The ointment tube tip is contaminated likewise by contacting an infected eye.[15] These induced infections may occur not only following treatment for obvious trauma but also in the routine eye examination for suspected injury.

POST-TRAUMATIC INFECTION

Extraocular infection may be manifest by a tissue cellulitis, conjunctivitis, or corneal ulcer. Intraocular infection may be revealed by hypopyon, plastic iridocyclitis, endophthalmitis, or panophthalmitis. Bacteriological studies in cases of frank intraocular infection frequently show sterile cultures.[16] When bacteria are isolated, gram positive cocci, especially staphylococci, have been the usual organisms causing panophthalmitis, but recently gram negative bacilli have been reported. It is likely that the organisms responsible for panophthalmitis are changing since sulfonamides and antibiotics have been so widely employed.[3]

Infection following eye wounds in Korea was high in those injuries resulting from missiles, especially land mines exploded in rice paddies,[7] which are well fertilized with human excreta. The resulting great variety and overwhelming load of pathogens caused gross infection, frequently obvious when the patient was first seen by an ophthalmologist, as early as six hours following injury. Infection following injuries from high velocity and high explosive missiles with small flying metallic particles was lower than from land mines which carry in dirt and vegetable matter.[22] Of the few cases cultured, staphylococci, streptococci, pseudomonas and colon bacilli were recovered.[7,12]

PREVENTION OF INFECTION

A. Examination. A careful examination should also be made for evidence of pre-existing infection. Obvious disease of the lids or conjunctiva leaves no doubt that the ocular flora contain pathogenic bacteria which demand specific medication. Every precaution should be taken to prevent the introduction of contaminants from the examination or treatment tray. If the injury is obviously a lacerating or perforating one, thorough examination and treatment should be reserved for the operating room under sterile surgical technics.

When the use of a stain or topical anesthetic is necessary, the sterility of the staining and flushing solutions should be ensured. The frequency of contamination of fluorescein solution by eye droppers has led some ophthalmologists to employ this stain by other means. Kimura's fluorescein-impregnated sterile filter paper strips[13] or the small compressed commercial wafers (Burroughs Wellcome & Co.) may be used. These are excellent to prevent stain contamination; however, the saline used to flush the excess stain, or the local anesthetic, antibiotic, or other solution which may have been employed, is also subject to contamination. Various dyes have been tried as substitutes, but fluorescein is still the most satisfactory. Of 105 biological stains,[4] only 15 show a solubility in water of 10 per cent. Other applicable dyes are either too irritating, stain too permanently, are unstable, are incompatible with preservatives, or have other disadvantages.

If the following precautions are taken in the preparation and use of solutions, contamination can be prevented:[14,24,25] (1) preparation of sterile solutions and the addition of preservatives; (2) elimination of the dropper-bottle top and substitution of a plain screw top; and (3) the use of individual or disposable eye droppers. The medicament bottle should not hold more than 15 cc. of solution which, if not used sooner, should be replaced every two weeks. We employ a cheap disposable plastic eye dropper* which is thrown away after one use and never touches the solution bottle again.[14]

Contamination of an eye ointment tube must be guarded against by not allowing the tube tip to touch the patient. A small amount of ointment may be squeezed onto the end of a sterile paper rod or the disposable dropper and be applied to the cul de sac.[14] Smaller, half-size tubes should be manufactured for self-medication to avoid contamination by delayed and multiple use and in the interest of economy.

B. Prophylaxis. *Minor trauma* to the eyelids, conjunctiva, or adnexa does not demand as vigorous prophylactic measures as more serious injury. "Overtreatment" should be avoided and the indiscriminate use of antibiotics is to be condemned. Satisfactory local bacteriostatic agents for minor trauma include a variety of antiseptics or chemotherapeutic agents. Zephirin® (benzalkonium ammonium chloride) 1:5,000 to 1:20,000 aqueous solution, or a dilute phenol mercuric nitrate solution may be used. Furacin,® a nitrofurazone derivative, is an effective antibacterial drug. Mercury bichloride, metaphen or merthiolate, 1:3,000, are mild antiseptics. Propionic acid (sodium propionate) is bacteriostatic but like zephiran, it cannot be depended upon to inhibit Ps. aeruginosa. Boric acid, argyrol, silver nitrate, zinc sulfate and yellow oxide of mercury are not currently recommended for the prophylaxis of infection.

Chemotherapeutic agents such as the sulfonamides are well applied in prophylaxis following minor ocular trauma. The local use of sulfadiazine or sulfathiazole, solution or ointment, is effec-

*Sanidrop — Marnel Co., Inc., 110 N. St. Asaph Street, Alexandria, Va.

TABLE I
DANGERS OF SULFONAMIDE AND ANTIBIOTIC THERAPY

Super-Imposed Infections (Insensitive Organisms)	Resistant Staphylococci Proteus Vulgaris Ps. Aeruginosa Candida albicans		
Hypersensitivity Reactions	Sensitization	Penicillin Streptomycin — Dermatologic Manifestations Sulfonamides	
	Hypersensitive State	Penicillin — Serum-sickness Penicillin — Anaphylactic Reaction	
	(Neomycin, Bacitracin and Polymyxin B Rarely Cause Hypersensitivity)		
Toxicity	Blood Dyscrasias	Sulfonamides — Thrombocytopenic Purpura Chloramphenicol — Aplastic Anemia	
	Gastrointestinal	Aureomycin Chloramphenicol Terramycin	Local Irritation Hypersensitivity Change in Bacterial Flora
	Hepatotoxicity	Aureomycin Terramycin	
	Nephrotoxicity	Bacitracin Neomycin Polymyxins (B & E Least)	Only Used Locally.
	Neurotoxicity	Streptomycin — VIII TH N Chloramphenicol — Optic and Peripheral Neuritis Sulfonamides — Paresis Accommodation, Transient.	

tive against many organisms, especially gram positive cocci. Gantrisin may be employed. Sodium sulfacetamide has enjoyed widespread popularity as a prophylaxis following minor eye injuries.

It is unnecessary to use antibiotics locally following these minor injuries. Indeed, much harm may be caused by their indiscriminate use, which may result in local allergy or general sensitivity to the antibiotic, the development of bacterial resistance and cross resistance, or superinfections with organisms not inhibited by the antibiotic.[9]

If local infection is already present at the time of injury, such as blepharitis or conjunctivitis, a medicinal agent of known efficacy must be applied to prevent the spread of this infection into the traumatized tissue.

Major extraocular trauma, which to me includes corneal abrasion in addition to severe lacerations of the lids, conjunctiva or adnexa, demands that every effort be made to prevent infection. Sulfonamides may be utilized in severe extraocular trauma; however, antibiotics are usually preferred. They may be employed locally or systemically. There are many antibiotics at our disposal, yet good judgment must be exercised in their application. Certain precautions are necessary (table I).

Penicillin solution or ointment should not be used as it causes much local tissue allergy and is capable of producing an anaphylactoid reaction which can have fatal consequences. More organisms are resistant to penicillin than any other antibiotic. Staphylococci are variously reported as being 30 to 48 per cent resistant, and streptococci have also become resistant to this antibiotic.[19] Nonlethal doses of penicillin may stimulate bacteria, resistant and insensitive strains, to grow more rapidly. The development of resistance to one drug has been shown to transmit resistance to others which may be moderate and not necessarily permanent.[9]

Antibiotics with major activity against gram positive rods may allow other bacteria, especially gram negative rods, to proliferate more rapidly after removal of the gram positive organisms. The indiscriminate use of antibiotics and sulfonamides in ocular therapy encourages this by possibly eliminating the antibiotic-producing activity of certain bacteria usually present in the ocular flora.[11]

Sodium sulfacetamide penetrates better than other sulfonamides, and although sulfonamides are said to retard regeneration of corneal epithelium, this has been disputed. Penicillin, aureomycin, streptomycin and terramycin penetrate the intact corneal epithelium poorly but chloramphenicol permeates well. All sulfonamides and antibiotics will penetrate the abraded cornea. Ointments have a more prolonged action, but an oily base is contraindicated in a perforating wound of the globe.

Leopold[17] and others[6] have recommended the local use of broad spectrum antibiotics or combinations which are unlikely to enjoy widespread systemic use. Bacitracin, neomycin and polymyxin are better used locally because of their systemic toxicity. These agents are not recommended in minor injuries, however, where the sulfonamides are adequate for prophylaxis. Prolonged use should be avoided. Polymyxin is effectively combined with terramycin and could be used with sodium sulfacetamide. This combination provides powerful antibacterial action against gram positive and gram negative organisms, including many strains of Ps. aeruginosa. I question the development of sensitivity from one application of these antibiotics, such as following the removal of a corneal foreign body. Most patients have previously received an antibiotic for some other condition in

TABLE II

PROPHYLAXIS OF INFECTION

Minor Trauma to lids, conjunctiva and adnexa. Including minor lacerations and removal of foreign bodies. Does not include corneal abrasion.

A. *Antiseptics Locally*:

1. Zephiran, 1:5,000 to 1:20,000 aqueous solution.
2. Furacin, 0.02% solution of 1% ointment.
3. Metaphen, merthiolate or mercury bichloride, 1:3,000 solution or ointment.
4. Sodium propionate, 5% solution or ointment.

B. *Sulfonamides Locally*:

1. Sodium sulfacetamide, 10 to 30% solution or ointment.
2. Sodium sulfathiazole or sulfadiazine, 2% solution or 5% ointment.
3. Gantrisan, 4% solution or ointment.

Major Trauma, Extraocular, severe lid, conjunctival and adnexal lacerations, multiple imbedded foreign bodies, corneal abrasions, etc.

A. *Antibiotics Locally*:

1. Terramycin, Aureomycin or Chloramphenicol 5 mg./cc. solution or 5 mg./gm. ointment
2.* Bacitracin, 1000 u/cc. solution; 500 u/gm. ointment
3.* Neomycin, 2.5-40 mg./cc. solution; 2.5 mg./gm. ointment
4.** Polymyxin, 10,000 u/cc. solution or gm. ointment

B. *Antibiotics Systemically*:

1. Penicillin, 300,000-600,000 u) Streptomycin, 0.5 gm.) intramuscularly for 3 days
2. Aureomycin or Terramycin, 250 mg. orally every 6 hours for 3 days

*Better used locally as cannot be used systemically.
**Best action against gram negative bacilli and, therefore, better combined with a broad spectrum antibiotic.

Major Trauma, Intraocular, perforating or penetrating injury to eyeball, intraocular foreign body, etc.

A. *Antibiotics Locally*:

1. Terramycin, aureomycin or chloramphenicol, 5 mg./cc. solution (or 5 mg./gm. ointment)
2. Bacitracin, 1000 u/cc. solution (500 u/gm. ointment)
3. Neomycin, 2.5-40 mg./cc. solution; (2.5 mg./gm. ointment)
4. Polymyxin, 10,000 u/cc. solution (or gm. ointment)

B. *Antibiotics Systemically*:

1. Penicillin, aqueous G, 500,000 to 1,000,000 units. Streptomycin, 0.5 gm. (intravenously every 8-12 hours for 3 days; change to intramuscularly when blood pressure is up.) (Benamid 2 gm. orally immediately; 0.5 gm. every 6 hours.)
2. Chloramphenicol, 3 gm. orally, then 1 gm. every 6 hours for 36 hours.
3. Terramycin or aureomycin, 1 gm. orally, repeated every 6 hours for 36 hours.

NOTE: in penetrating wounds of globe or adnexa, it is important to administer tetanus toxoid (0.5 cc.) if patient already immunized. If not, tetanus antitoxin (1500-5000 u, subcutaneously or intramuscularly after sensitivity test.) If gas gangrene suspected, 5,000-10,000 u antitoxin subcutaneously or intramuscularly as prophylaxis.

the form of a skin ointment, troche, aerosol spray, nasal drop or vaginal tablet, and the ophthalmologist alone cannot be blamed for increasing bacterial resistance and sensitizing patients.

In severe intraocular trauma local antibiotic therapy must be supplemented by oral or parenteral therapy. As Leopold has aptly stated, "the best way to treat an intraocular infection is to prevent it!" Procaine penicillin, 300,000 to 600,000 units combined with streptomycin 0.5 gm., intramuscularly, is an effective prophylaxis for trauma to the lids and ocular adnexa. It penetrates the globe poorly and is not recommended for the prevention of intraocular infection following perforating wounds to the eyeball.[16] The absorption of intramuscularly administered antibiotics is retarded and erratic in shock, and it was found in Korea[21] that this combination did not produce satisfactory concentrations in wounded tissues. This resulted in the use of aqueous penicillin G intravenously at the battalion aid station level as soon after wounding as possible in doses of 500,000 to 1,000,000 units every eight to twelve hours. Streptomycin, 0.5 gm., is given at the same time. This combination may be administered with other intravenous fluids. If the blood pressure is not reduced after twenty-four hours, these same agents are then given intramuscularly. This therapy is re-evaluated after seventy-two hours and changed if indicated. Streptomycin is discontinued after five days and a broad spectrum antibiotic should be considered if further therapy is indicated.

This is generally the same regime recommended by Leopold[16] in the prophylaxis of a penetrating ocular wound. He feels, however, that chloramphenicol, 3 grams orally followed by 1 gram every six hours, is the first choice in prevention of intraocular infection because of its broad spectrum and the fact that it penetrates the blood aqueous barrier well. One must remember, however, that this drug has been incriminated as causing a few cases of aplastic anemia and this calculated risk must be recognized. Perhaps it should be reserved for prophylactic use in bilateral penetrating intraocular wounds where total blindness is threatened.

The intraocular concentration of penicillin-streptomycin combination is increased by intravenous administration and the use of the previously mentioned massive dosage. Probenecid (benemid®), 2 grams orally with the initial dose of penicillin and 0.5 gram every six hours for maintenance, will prolong the concentration of penicillin by interferring with its excretion.[16]

In brief, antiseptics or sulfonamides should be used locally in the prophylaxis of infection following minor ocular trauma. More vigorous preventive measures are called for after major extraocular injuries (including corneal abrasion) with broad spectrum antibiotics locally and, in some instances, systemically. Major trauma which involves penetration of the globe demands drastic attempts to prevent infection. Broad spectrum antibiotics are employed locally in solution form and by massive dosage systemically (table II).

TREATMENT OF INFECTIONS

A. Extraocular Infection. Post-traumatic infections of the lids, conjunctiva and ocular adnexa usually respond rapidly to sulfonamide or antibiotic therapy, local and systemic. Smears, cultures and sensitivity tests will aid in the selection of a therapeutic agent if beneficial results are not obtained in twenty-four to thirty-six hours.

Corneal ulcers must be treated vigorously by every means available before culture results are obtained. The eye may be lost in twenty-four to forty-

eight hours if treatment is not effective. Local therapy with broad spectrum antibiotics must be concentrated and frequent. Polymyxin B or streptomycin should be used in combination with the antibiotic of choice in an effort to inhibit a mixed flora with gram negative bacilli. Polymyxin B as a corneal bath or by iontophoresis is preferred for virulent Ps. aeruginosa ulcers.[28] Gantrisin and chloramphenicol are also effective against certain strains.[2] The value of systemic antibiotic therapy is doubtful, although the use of chloramphenicol may be beneficial. General measures, of course, are also necessary, such as fever therapy. The efficacy of paracentesis is questionable.[8]

B. Intraocular Infection. Adequate intensive therapy is urgent at once, as the fate of the globe may be determined in a matter of hours. It is difficult to obtain material and to culture growths which will aid in directing treatment. Therefore, therapy should not be withheld while awaiting the identification of organisms and their sensitivities to antibiotics. If penicillin-streptomycin has been used in prophylaxis in adequate dosage and infection occurs, the organism, even though a coccus, is probably not sensitive to this antibiotic. Therefore, time should not be lost in its use and another antibiotic should be employed, preferably chloramphenicol, unless this was the antibiotic employed for prophylaxis. Leopold[16] has beautifully outlined a program of therapy of intraocular infection. The antibiotics previously mentioned should be administered by every possible method, subconjunctival and intravitreal injection, in addition to massive systemic therapy. If the infected eye does not react favorably in twenty-four hours, treatment should be changed to another antibiotic. The prognosis is extremely poor despite any therapy once panophthalmitis has developed.

SUMMARY

Infection following eye trauma may result from pathogenic bacteria present in the ocular flora or introduced from without. Contaminated instruments or medicaments from the eye treatment tray may transmit organisms. Prophylaxis rests with eliminating this source and with the use of antibacterial agents locally and/or systemically. Antibiotics should not be indiscriminately employed in minor trauma where milder agents will suffice. Corneal abrasions should be classified under major injuries and a broad spectrum antibiotic should be combined with one apt to be effective against gram negative bacteria to prevent infection. Prompt massive antibiotic prophylaxis is demanded following intraocular trauma. Treatment of post-traumatic ocular infections varies with the location. Intraocular infection offers a poor prognosis, although concentrated antibiotic therapy may salvage some vision.

The prevention of ocular infection following trauma is much more gratifying than its treatment.

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EMERGENCY AND FIRST AID TECHNICS AS PRACTICED INSIDE PLANT GATES

RALPH S. MCLAUGHLIN, M.D.
CHARLESTON, W. VA.

EACH industrial ophthalmologist is called upon for advice on emergency first aid to eye accidents as they happen on the job. You will all find, as I have, that such advice is easy to give and is well followed on the severe accidents. Our advice on the minor accidents is well tempered by management before it reaches the injured employee. There are a number of factors that enter the picture. Analysis of these factors permits us to consider only the two basic ones: that of cost and that of overconfidence. In my experience neither has been completely solved, for it is impossible to remedy the overconfidence and enthusiasm of an industrial physician or nurse who actually is not equipped by training, or with proper instruments, to make safe diagnoses on so-called minor injuries. Although the task is discouraging, we must continue in our efforts to protect the injured employee: that is our duty as ophthalmologists.

Emergency First Aid for Severe Accidents

Intraocular foreign bodies, perforations of the globe, deep lacerations of the lids, hemorrhage into the anterior chamber, and similar injuries should be, and usually are, lightly bandaged, the patient is immobilized and sent without delay to the ophthalmologist according to telephone directions from him on the particular case. I can assure you that the plants are glad to turn these cases over to us and to ask us for advice. There is never any question about the handling of the severe accident inside the plant. Thus we can dispose of the severe accident.

Minor Accidents

The minor accident is our great source of worry, for many eyes are lost for lack of early diagnosis and treatment. In this classification I would place corneal foreign bodies, minor chemical burns and asymptomatic intraocular trauma.

I believe that a foreign body may be safely removed by the plant medical staff if a moist cotton swab passed across the object will remove it. In many instances a plant physician may even use an eye spud if his training has included such technics. Certainly all cases of this type should be followed for a day or two to ensure proper healing. Any complication such as ulcer or a painful eye should be referred at once to the ophthalmologist. The medical staff of the plant should be instructed in the use of fluorescein for diagnosis.

The minor chemical burn may have dangerous consequences and should be referred to the ophthalmologist if fluorescein still stains after thirty minutes of washing with proper equipment. In-plant equipment for a chemical plant should contain nothing but equipment for washing. There is no place for any other medication so far as the chemical burn is concerned. Every chemical burn that retains fluorescein stain after thirty minutes of washing is a major chemical burn until it is proven otherwise. There certainly is no logic for any diagnosis or treatment of such an injury without the use of the biomicroscope.

Asymptomatic injuries of the globe should be carefully checked by a physician proficient with the ophthalmoscope. I believe we should encourage our industrial physicians to use the ophthal-

Presented at the Special Program of the Joint Committee on Industrial Ophthalmology at the Fifty-Eighth Annual Session of the American Academy of Ophthalmology and Otolaryngology, Oct. 11-16, 1953, Chicago, Ill.

moscope in all routine physicals, for only with regular study of the normal will they be able to correctly diagnose intraocular trauma.

The Safety Division in the Plant

The physical setup in any plant differs, of course, according to the type of material manufactured. Since part of our duty is the prevention of injury, every plant should have a safety crew headed by a man trained in such procedure. This safety division should work closely with the medical department and the consulting staff to obtain the best results. All equipment for prevention of eye injuries should be available, such as goggles, shields, and other devices for the protection of eyes as the process of the plant dictates. This division should also have an active safety-glass program furnishing corrected protective lenses for all men in the plant. I am positive from actual experience in the Union Carbide plants in my area that astounding results may be obtained from such a program. Nearly all the other plants in the Kanawha Valley area are now sponsoring such programs with equal success.

Medical dispensary equipment should be maintained in all plants and the equipment should be adequate for the type of plant concerned. If enough men are employed, a plant physician should be in attendance and should be trained for his work, both by basic schooling and by constant consultation with the consulting staff of the plant. Even the small plant may have an effective medical dispensary staffed with nurses, or even by a member of the safety division. With patience and advice from the consultants, such personnel should be able to make accurate diagnoses and to give effective first aid.

We must continue to give our time for instruction to the plant medical and safety staff. We must continue to discuss patiently and, if need be, to argue strongly with nonmedical management to the point where men are privileged to keep their sight if it is within our power to make it possible. It is difficult for me to see how anyone can look at profit and loss accounting when vision is at stake.

SOME SPECIAL ITEMS OF IMPORTANCE IN INDUSTRIAL EYE CARE

HEDWIG S. KUHN, M.D.
HAMMOND, IND.

THERE are a few special items to call to your attention, which the previous speaker did not stress.

It seems important to realize how far our thinking has gone in the last ten years in the awareness that there actually is such a thing as emergency eye care in which the ophthalmologist plays the number one role. We think of first aid and emergency eye care as civilian, lay, and so forth, but emergency care in the case of eyes is not a layman's job, unless that layman is carefully instructed by the ophthalmologist, who continues to carry the responsibility of the case. Dr. McLaughlin has brought this out forcefully. We all are apt to be a little lax in this regard.

The mistakes that our nurses make in industry and the type of care they give are dependent on what we teach them and a measure of our interest and effectiveness.

Among the hazards to which an ophthalmologist can be subjected is having someone overlook a burn of the canthus and the tear duct, which, as Dr. Spaeth has commented, requires a long plastic procedure. The ophthalmologist suffers this hazard because someone did not recognize that a little burn, instead of being at the edge of the lid, covered the tear duct.

Another problem arises when the general practitioner sutures lid lacerations and contractions result. I wouldn't dare say that any ophthalmologist ever did this, but Dr. Spaeth can say it.

Or a nurse may pull out a piece of wire which has perforated the eyeball, thinking she is assisting us before she sends the patient over. One nurse in our area evulsed the contents of an eyeball in her eagerness to see the injury, because no one had taught her when to examine an eyeball and when not to. The nurse or safety man may not recognize the intraocular foreign body case. I think a measure of our protection can lie in insisting that every employee, or every person who is struck in the eye with a foreign body while grinding, chipping, hammering or chiseling, even though the nurse sees nothing but the man has felt something, be sent to the ophthalmologist. He can eliminate the simple cases on the first visit, and he has the intraocular foreign body case within the first twenty-four hours.

A fifth hazard lies in plant treatment of an abrasion, using contaminated solutions. This becomes our problem when it produces ulcers and the loss of eyes. I think everybody here will stand behind Colonel King's statement about droppers being inserted in the eye and carrying infections, not only in the plants, not only in first aid stations but in the ophthalmologist's office. I do not think he has to worry about our not being responsible. We know that. We want "outs."

Another hazard we have is the use of atropine on eye trays in industry. Atropine is also often used in the home. I know one doctor who had a glaucoma case resulting from the use of atropine after the removal of a foreign body by the nurse in the plant. This case went on to surgery. I don't know whether the eye was lost or not, but that is a great hazard to us.

Presented at the Special Program of the Joint Committee on Industrial Ophthalmology at the Fifty-Eighth Annual Session of the American Academy of Ophthalmology and Otolaryngology, Oct. 11-16, 1953, Chicago, Ill.

Another hazard we have is the excessive use of antibiotics by these laymen (and I say "laymen" for nurses when it comes to eyes, because I think they are laymen). The biggest thing to teach a nurse is what not to do—not what to do but what not to do.

Another hazard is the lack of accurate records of vision prior to an injury; that is, pre-employment records. With such records, the man with a foreign body at the limbus, who actually had 20/100 vision for the last twenty-five years, cannot claim that it was 20/20 and expect the industrial commission to back him up. It is our responsibility to let management know they ought to have better records. The lack of accurate records of vision leads to endless hours of work to offset these false claims.

Another hazard that ophthalmologists have is in the careless handling of chemical eye burns at the plant. I don't mean Dr. McLaughlin's plant but I mean in most small plants where there is no irrigating equipment of any kind and the doctor has no chance. We have seen to it that equipment has been installed and the technics of irrigation taught in the large plant, but we have overlooked the little plants and the plasterer, the building man, the refrigerating serviceman, the paper hanger, all of whom use chemicals, as well as people working with detergents in their homes and in the community. These are the people who have gone to the drugstore or to the next-door neighbor for help and have delayed longer before they came to us. They are our hazard because we can't do for them what we are now able to do for the patient in the large plant.

Dr. Spaeth and Colonel King and Dr. McLaughlin have laid a pattern for us in teaching nurses in industry how to handle cases and what to keep on an eye tray. Our continuing effort is to keep informed and up-to-date on our cases. We must know about new chemicals, because chemicals are changing continuously, and we need to know what the hazards are and what new technics are necessary to meet them.

We must strive more diligently in our effort to acquire facts, and all the facts, before we draw conclusions regarding cause and effect in possible legal cases—and we should consider every eye injury as a possible legal case.

The sloppy and premature statements—and I have reviewed about fifteen government cases, and have seen letters from the ophthalmologists on these cases in which the statements are based, sometimes, on nothing. Yes, "it might have contributed," but I am sure, from the rest of the description and the conclusions and the "whereases" that this individual did not go back into the history, did not look up the literature, did not get the evidence before he stated his alleged facts.

In a recent case the doctor said, "This man, exposed for three months, for about fifteen or twenty minutes a day to ultraviolet radiation in welding, had a resulting cataract, retinitis pigmentosa and macular degeneration." This doctor said that ultraviolet rays *could* have caused such a condition. This is just one thing about which we can go to court and say positively, "Ultraviolet can never cause any intraocular condition." That one statement by one doctor—and he is a very prominent doctor—made, I am sure, carelessly, not realizing what the issue was, need not have been made, for we do know about ultraviolet.

We need to know about the toxic systemic effects of chemicals. We need to get off the fence in straddling statements, unless there just isn't any other place for us to get. There are cases in which, of course, we cannot be sure, and we may be asked, "Isn't there the slightest little chance that maybe this

contributed?" Well, if there is a fairly good chance it might have contributed, we do give the man the benefit of the doubt.

We must work, all of us, toward the revision of state laws, labor union attitudes, to make it possible to place the so-called handicapped man on the job. That is part of the eye injury program: care, technics, follow-up, make it possible to put this injured fellow back on the job. It isn't the technic, it isn't Dr. Spaeth's beautiful surgery, but it is part of the thinking on eye injuries.

DISCUSSION

DR. KING: Replying to Dr. Kuhn's question regarding an increase of virus infections following the overuse or misuse of antibiotics, we have not seen any that could be specifically ascribed to virus infections. Of course, we do see them but we cannot pin them on the overuse of antibiotics. We have seen more Pseudomonas, which may have been due to the fact that the antibiotics or sulfonamides have been unwisely used in prophylaxis.

J. F. GIPNER, M.D., Rochester, N. Y.: I would like to ask Colonel King about the use of cortisone in eye injuries.

DR. KING: I purposely omitted cortisone in my little talk. I do not feel it has any place in prophylaxis of infection following eye injury. As a matter of fact, it may be harmful following certain injuries, for example, corneal lacerations where healing may be delayed, although at present that is a disputed question. I think it certainly has a place in burns and should possibly be combined with an antibiotic in prophylaxis or treatment of the immediate burn—sulfonamide or antibiotic.

Corneal infections of viral etiology, as you well know, may increase in severity if cortisone is used. Bacterial infections of the ocular adnexa and the anterior segment, accompanied by much inflammatory reaction, may recover more rapidly and with less scarring if topical cortisone or hydrocortisone is employed.

In the case of an infection, cortisone or hydrocortisone must be accompanied by an effective antibacterial agent because of the fact that the tissue inflammatory reaction, its defense mechanism, is reduced, and cortisone may lessen the damage by reducing the inflammatory reaction. That is, as Dr. Leopold has brought out, it does not appear to interfere when the organism is susceptible to the antibiotic which is employed with it. He also states that if the organisms are not sensitive, the use of cortisone will be of no consequence anyway because the eye will be lost.

HARKISHEN SINGH, M.D., Hines, Ill.: I would like to ask Dr. King about the incidence of sympathetic ophthalmias as a result of Korean eye injuries.

DR. KING: We have not seen any. We have seen some very severe cases of anaphylaxis following intraocular damage, with traumatic cataract and rupture of the lens capsule, and I can say unequivocally that hydrocortisone and cortisone systemically have saved many eyes in these instances.

DR. MCLAUGHLIN: First, Dr. Kuhn's question concerning the adaptation of this type of program to small industries. That is one of the most frustrating things we have to deal with. There are ways to do it. It takes a lot of patience.

Dr. Kuhn mentioned the need of an eye care program in service stations, small garages, and so on. I have found no answer to that except by hammering at the people I do get in the office, trying to teach them and asking them to pass it on to their fellow workers.

DR. WISE, Iowa City, Iowa: I would like to ask Dr. McLaughlin if he would care to go into the steps to be taken in the setting up of an eye emergency program, if one were retained as the consultant.

DR. MCLAUGHLIN: In answer to Dr. Wise's question, when we are asked to be consultants to industry I believe we have a beautiful opportunity, for industry has decided they want to do something different than they are doing at the present time.

My first act is to ask to make a visit to the plant. That courtesy should be extended to every industrial ophthalmologist, to go to the plant at any time as a part of a duty to the employees, not to management. First make an inspection of the plant, to get an idea of their process, what they are making, how they make it, what type of equipment they have, what type of safety department they have. Talk to the safety man. Have him go around with you when making the inspection.

After this information is all at hand, then sit down and map out a set of preliminary rules, which may be modified according to ex-

perience as we go along. It has been a very satisfactory thing to be able to get into plants in that way and really do a good job of setting up a first aid program.

I mentioned our Union Carbide plants. Most of you are familiar with the progressive attitude that Union Carbide has toward its employees. Even with the personnel and the medical department they have, I still go to the Union Carbide plant and look things over once in a while. An outsider sees things that other people do not see. I also go to the plants and talk to the men. That is another important factor in a first-aid setup in a plant.

All of the plants where I am consultant have indoctrination lectures for the new employees. Each man must attend a lecture. We have in the chemical industry a motion picture film (some of you have seen the film) that we show to the groups, and to the new employees.

There are so many things that we can do to help industry set up a program and keep it going that it is practically a full-time job.

ROLAND J. VIGER, M.D., Montreal, Que., Canada: May I ask Dr. McLaughlin to tell us the advantages he has been noticing in the self-insurance type of protection as compared to workmen's compensation?

DR. MCLAUGHLIN: I would say the advantages are none, except to the accounting department. If I had my way, there would be no self-insurance, considered strictly from a medical standpoint. I believe that with the freedom of referring cases under an existing insurance plan, there is bound to be better treatment.

DR. SPAETH: I would like to subscribe to Dr. McLaughlin's statement there, that I see no advantages whatsoever, in my experiences with the Philadelphia concerns, in self-insurance.

DR. KUHN: I just want to make two comments on Dr. McLaughlin's comments. One is that problems regarding compensation are partly regional. We have had self-insured plants in our area for a long time, and there isn't any difference. Maybe they have been well indoctrinated, but they follow our rules and regulations just like the others do. I imagine, in a cost-conscious area, with new plants, with self-insurance, it might be a problem.

Second, I do not think it is only what we give a plant when we go to the plant, but I think it is what the plant teaches us, especially if it is our first or second visit, when we go to see a plant. Am I right?

DR. MCLAUGHLIN: You are right. May I make one comment on Dr. Kuhn's comment on my comment? Self-insurance in our area is new. We have had it but a short time, and it has some growing pains, I suppose.

RHEIM JONES, M.D., Idaho Falls, Idaho: I am wondering, in a child with a lacerated canaliculus, not impaired primarily, what is the ideal age for secondary repair?

DR. SPAETH: How old is the child?

DR. JONES: Five.

DR. SPAETH: Without being the least bit facetious, I say "as soon after the discovery of the situation as it is possible to repair it." I know of no reason for delaying the repair as a secondary procedure in such a case, other than the patient's physical condition. I think the sooner it is repaired, the better.

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CALIFORNIA

Stanford University School of Medicine will present the annual postgraduate conference in Ophthalmology from March 21 through March 25, 1955. Registration will be open to physicians who limit their practice to the treatment of diseases of the eye; or eye, ear, nose and throat. In order to allow free discussion by members of the conference, registration will be limited to thirty physicians.

Instructors will be Dr. A. Edward Maumenee. Dr. Dohrmann K. Pischel, Dr. ax Fine, Dr. thur J. Jam-

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MISSOURI

Colonel E. A. Baker, O.B.E., M.C., of Toronto, Canada, was the recipient of the Leslie Dana Medal for the prevention of blindness awarded by the St. Louis Society for the Blind in cooperation with the National Society for the Prevention of Blindness and the Association for Research in Ophthalmology at a dinner meeting in St. Louis on November 22, 1954.

PENNSYLVANIA

The Seventeenth Annual de Schweinitz Lecture was delivered by Dr. Conrad Berens of New York before the Section on Ophthalmology of the College of Physicians of Philadelphia on November 18, 1954. Dr. Berens discussed "Results of Operations for Glaucoma with Special Reference to Cycloelectrolysis and Iridocornea Sclerectomy."

NEW JERSEY

Dr. Hubert N. Alyea, chemistry professor at Princeton University, addressed the members of the New Jersey Ophthalmological Society and their guests Thursday, November 11. Dr. Alyea spoke on "Atomic Energy: Weapon for Peace."

Dr. C. Byron Blaisdell, Chairman of the Board of Trustees of The Medical Society of New Jersey, was a guest of honor at the dinner which preceded the evening program.

The following men were elected for office for the year 1955: Dr. George P. Meyer of Camden, president; Dr. Lee W. Hughes, Newark, vice-president; Dr. Charles E. Jaeckle, East Orange, secretary; and Dr. Jay E. Mishler, Atlantic City, treasurer.

NEW YORK

Grants totaling $22,500 for research projects against the blinding eye diseases were announced today by the National Society for the Prevention of Blindness, nonprofit sight conservation agency.

In making the announcement Dr. Franklin M. Foote, executive director of the Society, said that 40 per cent of the amount is being used to help isolate the cause of retrolental fibroplasia (RLF), the dread eye disease that attacks premature babies.

"In little more than a single decade," Dr. Foote pointed out, "retrolental fibroplasia has increased sevenfold and is now the largest single cause of blindness among pre-school children. Since it was first described in 1942, it has become a national problem, with 5,000 children in the United States now blind from this disease alone."

Dr. Foote explained that most cases of RLF occur in premature babies of low

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STRABISMUS: A SYMPOSIUM, Kenneth C. Swan et al	0.50
REFRACTION DIFFICULTIES (Revised) Clarence A. Veasey, Jr.	0.50

ABSTRACTS

Each set contains the available outlines and briefs of instruction courses as presented at Academy meetings. Unbound.

Ophthalmology:	1951	$2.50
	1952	3.50
	1953	5.00
	1954	7.00
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W. L. Benedict, M.D.
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News - - - Notes

CALIFORNIA

Stanford University School of Medicine will present the annual postgraduate conference in Ophthalmology from March 21 through March 25, 1955. Registration will be open to physicians who limit their practice to the treatment of diseases of the eye; or eye, ear, nose and throat. In order to allow free discussion by members of the conference, registration will be limited to thirty physicians.

Instructors will be Dr. A. Edward Maumenee, Dr. Dohrmann K. Pischel, Dr. Jerome W. Bettman, Dr. Max Fine, Dr. Earle H. McBain and Dr. Arthur J. Jampolsky.

Programs and further information may be obtained from the Office of the Dean, Stanford University School of Medicine, 2398 Sacramento Street, San Francisco 15, California.

MICHIGAN

The Department of Ophthalmology of Wayne University College of Medicine will give nine months' training in Basic Ophthalmology beginning September 12, 1955.

Six mornings a week are spent in lectures and laboratories. Each afternoon students are assigned to eye clinics of affiliated hospitals. A fundus clinic is held weekly; also, one on muscles.

Students are given 120 hours of training in physiological optics, 122 hours in histology and pathology, 60 hours in biochemistry, 40 hours in neuroanatomy, etc.

Tuition is $500. Brochures on the Basic Science Course will be mailed upon request. For further information write Dr. A. D. Ruedemann, Chairman, Department of Ophthalmology, 690 Mullett Street, Detroit 26, Michigan.

MISSOURI

Colonel E. A. Baker, O.B.E., M.C., of Toronto, Canada, was the recipient of the Leslie Dana Medal for the prevention of blindness awarded by the St. Louis Society for the Blind in cooperation with the National Society for the Prevention of Blindness and the Association for Research in Ophthalmology at a dinner meeting in St. Louis on November 22, 1954.

PENNSYLVANIA

The Seventeenth Annual de Schweinitz Lecture was delivered by Dr. Conrad Berens of New York before the Section on Ophthalmology of the College of Physicians of Philadelphia on November 18, 1954. Dr. Berens discussed "Results of Operations for Glaucoma with Special Reference to Cycloelectrolysis and Iridocornea Sclerectomy."

NEW JERSEY

Dr. Hubert N. Alyea, chemistry professor at Princeton University, addressed the members of the New Jersey Ophthalmological Society and their guests Thursday, November 11. Dr. Alyea spoke on "Atomic Energy: Weapon for Peace."

Dr. C. Byron Blaisdell, Chairman of the Board of Trustees of The Medical Society of New Jersey, was a guest of honor at the dinner which preceded the evening program.

The following men were elected for office for the year 1955: Dr. George P. Meyer of Camden, president; Dr. Lee W. Hughes, Newark, vice-president; Dr. Charles E. Jaeckle, East Orange, secretary; and Dr. Jay E. Mishler, Atlantic City, treasurer.

NEW YORK

Grants totaling $22,500 for research projects against the blinding eye diseases were announced today by the National Society for the Prevention of Blindness, nonprofit sight conservation agency.

In making the announcement Dr. Franklin M. Foote, executive director of the Society, said that 40 per cent of the amount is being used to help isolate the cause of retrolental fibroplasia (RLF), the dread eye disease that attacks premature babies.

"In little more than a single decade," Dr. Foote pointed out, "retrolental fibroplasia has increased sevenfold and is now the largest single cause of blindness among pre-school children. Since it was first described in 1942, it has become a national problem, with 5,000 children in the United States now blind from this disease alone."

Dr. Foote explained that most cases of RLF occur in premature babies of low

birth weight, and destroy vision before the age of six months.

The Prevention of Blindness executive reported that research scientists, mobilizing against retrolental fibroplasia, have succeeded in ruling out several theories as to its cause. "For example," he said, "it has been demonstrated that RLF is not caused by premature exposure of the retina to light, nor by a deficiency of vitamin E."

Although research so far has not produced certain proof of cause, Dr. Foote added, recent studies "have shown high oxygen ratios to be an important factor in the alarming increase of RLF." He pointed out, however, that extra oxygen is often essential for the survival of premature babies, which means that intensified research must examine methods of stopping retrolental fibroplasia while insuring the best possible chance of survival for the premature infant.

Eye researchers now working on RLF grants from the National Society for the Prevention of Blindness include: L. Emmett Holt, Jr., M.D., New York University-Bellevue Medical Center; Arnall Patz, M.D., Georgetown University, Washington, D. C.; and Theodore H. Ingalls, M.D., Harvard University, Cambridge. In addition, the Prevention of Blindness Society is helping to support a major coordinated RLF study in 16 hospitals in various parts of the country.

Dr. A. Fuchs wishes to announce his going abroad for an extended stay to gather material for a book "Geography of Eye Diseases."

Mail will reach him a Meran, Italy, Fluggigasse 20.

TEXAS

The Dallas Southern Clinical Society has announced its annual Spring Clinical Conference to be held March 14 to 17, 1955. Among the honor guests will be Dr. Joel J. Pressman of Los Angeles and Dr. G. O. Proud of Kansas City, Kansas, representing otolaryngology, and Dr. Paul A. Chandler of Boston and Dr. Harold G. Scheie of Philadelphia representing ophthalmology.

The Dallas Academy of Ophthalmology and Otolaryngology will have as its honor guest on February 1, 1955, Dr. Michael J. Hogan of San Francisco. Dr. Hogan will deliver a lecture at 4 p.m. on "Observations on the Pathology and Management of Certain Post-Cataract Complications." At 7:30 p.m. his lecture will be on "Certain Observations on the Diagnosis and Management of Patients with Uveitis."

The meeting of the Dallas Academy on January 11 will feature a presentation and discussion of slides demonstrating eye, ear, nose and throat pathology by Dr. C. T. Ashworth of Ft. Worth and Dr. Louis S. Smith of Dallas.

Dr. Morris F. Waldman is president of the Dallas Academy of Ophthalmology and Otolaryngology and Dr. M. Ray Harrington is its secretary.

INDIA

The XVI All India Ophthalmological Conference will take place in Bombay in the first week of March, 1955. The conference is devoting its scientific session to a symposium on Diseases of the Lacrimal Apparatus. A most cordial invitation to attend is extended to all members of the American Academy of Ophthalmology and Otolaryngology.

POSITIONS AVAILABLE

Fellowship in Allergy and Otolaryngology for a period of three months with a stipend of $200.00 per month. For further information, write to French K. Hansel, M.D., 1229 Missouri Theatre Building, 634 N. Grand Boulevard, St. Louis 3, Mo.

Wanted: Ophthalmologist in well-established clinic in community in Upper Midwest, population 8,000, fine agricultural area. Salary first year with opportunity to buy into partnership. For further information, write to Howard M. Winholtz, M.D., Clinic Manager, Worthington Clinic, Worthington, Minn.

The Albert Einstein College of Medicine of Yeshiva University offers Senior and Junior residencies in January and July of 1955 at the Bronx Municipal Hospital Center. The hospital is a general one and contains 1400 beds, all of which are to be used for city ward cases. Active, surgical and OPD services will be available. Teaching and research will be part of the training program. The entire hospital is staffed by the faculty of the medical college. For further information please write to Dr. Max Chamlin, Department of Ophthalmology, Albert Einstein College of Medicine, Bronx 61, New York City.

ASSISTANT RESIDENCY in each service — ophthalmloogy and otolaryngology, beginning July 1, 1955. AMA, ACS approved. 45 bed EENT Hospital. Salary and maintenance. Apply: Superintendent, McPherson Hospital, Durham, N. C.

ASSOCIATE IN OTOLARYNGOLOGY. Well-trained otolaryngologist seeking connection with established office. Please communicate with Milton L. Jennes, M.D., 14 Central Avenue, Waterbury 2, Conn.

Listings of positions available should be sent to W. L. Benedict, M.D., 100 First Avenue Building, Rochester, Minn., by the fifth of the month preceding publication. They should include (1) type of physician wanted (ophthalmologist or otolaryngologist; diplomate, resident, etc.); (2) type of position to be filled; and (3) whom to write for further information. Unless otherwise requested, listings will be published once only.

The Academy will handle no further correspondence beyond the listing and assume no responsibility. Neither does it endorse nor guarantee any of the published listings.

The Council on Physical Medicine and Rehabilitation of the American Medical Association has voted to discontinue its acceptance program for electrical hearing aids.

DIRECTORY OF OPHTHALMOLOGIC AND OTOLARYNGOLOGIC SOCIETIES

INTERNATIONAL

INTERNATIONAL ASSOCIATION OF EYE, EAR, NOSE AND THROAT SOCIETY SECRETARIES
President: Dr. Roderick Macdonald
Secretary-Treasurer: Dr. Daniel S. DeStio, 1006 Highland Building, Pittsburgh 6, Pa.
Time and Place: October 11, 1955, Palmer House, Chicago, Ill.

INTERNATIONAL ASSOCIATION FOR PREVENTION OF BLINDNESS
President: Dr. P. Bailliart, 47 Rue de Bellechasse, Paris VIIe, France
Secretary-General: Prof. A. Franceschetti, Clinique Ophthalmologique de l'Université, Geneva, Switzerland

INTERNATIONAL BRONCHO-ESOPHAGOLOGICAL SOCIETY
President: Dr. Antonio da Costa Quinta
Secretary: Dr. Chevalier L. Jackson, 3401 N. Broad Street, Philadelphia 40, Pa.
Time and Place: March 19 and 20, 1955, Havana. November, 1955, Buenos Aires.

INTERNATIONAL COLLEGE OF SURGEONS, SECTION OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. Francis L. Lederer
Secretary: Dr. Louis Savitt, 3403 Lawrence Avenue, Chicago 25, Ill.

INTERNATIONAL COUNCIL OF OPHTHALMOLOGY
President: Sir Stewart Duke-Elder
Secretary: Prof. Dr. Edward Hartmann, 2, Avenue Ingres, Paris (16e) France
Time and Place: The Council meets at the time and place of each International Congress (usually every 4 years) and other years alternately in France and Great Britain. (May 7, 1955, Paris, France)

INTERNATIONAL FEDERATION OF OPHTHALMOLOGICAL SOCIETIES
President: Sir Stewart Duke-Elder
Secretary: Dr. Edward Hartmann, 2 Avenue Ingres, Paris (16°), France
Time and Place: September, 1958 in Brussels, Belgium

INTERNATIONAL ORGANIZATION AGAINST TRACHOMA
President: Dr. A. F. MacCallan
Secretary-General: Professor Arnold Sorsby, 45 Lincoln's Inn Fields, London W. C. 2, England

PAN-AMERICAN ASSOCIATION OF OPHTHALMOLOGY
President: Dr. M. E. Alvaro
Secretary: Dr. Daniel Snydacker, 109 North Wabash Avenue, Chicago 2, Ill.
Time and Place: February 1956. Santiago, Chile

PAN-AMERICAN ASSOCIATION OF OPHTHALMOLOGY, PUERTO RICO CHAPTER
President: Dr. Luis J. Fernandez, Box 2206, San Juan 10, Puerto Rico
Secretary: Dr. P. Fernandez
Place: San Juan

PAN-AMERICAN ASSOCIATION OF OTO-RHINO-LARYNGOLOGY AND BRONCHO-ESOPHAGOLOGY
President: Dr. Juan M. Tato
Secretary: Dr. Chevalier L. Jackson, 3401 N. Broad Street, Philadelphia 40, Pa.
Time and Place: Fifth Pan-American Congress of Oto-Rhino-Laryngology and Broncho-Esophagology, San Juan, Puerto Rico. Spring, 1956. President of Congress, Dr. Juan Font, Puerto Rico

FOREIGN

THE OPHTHALMOLOGICAL AND OTOLARYNGOLOGICAL SOCIETY OF ALBERTA
President: Dr. W. S. S. Armstrong
Secretary: Dr. M. R. Marshall, Wells Pavilion, University Hospital, Edmonton, Alberta, Canada
Time and Place: Spring of 1955 in Edmonton, Alberta, Canada

ALL-INDIA OPHTHALMOLOGICAL SOCIETY
President: Dr. Alice B. Laker
Secretaries: Dr. S. N. Cooper and Dr. V. K. Chitnis, Laud Mansion, 21, Queen's Road, Bombay 4, India
Time: March, 1955 in Bombay

ASSOCIACAO MEDICA DO INSTITUTO PENIDO BURNIER
President: Dr. Leoncio de Souza ueiroz
First Secretary: Dr. Alberto Galo, 1st
Second Secretary: Dr. Aloisio Af. Ferreira

AUSTRIAN OTOLARYNGOLOGICAL SOCIETY, VIENNA
President: Prof. Dr. E. Schlander
Secretary: Dr. Julius Popper, Schottenring 17, Wien I., Austria
Time and Place: First Tuesday of the month. Vienna General Hospital, Alserstrasse 4, Vienna IX.

BOMBAY OPHTHALMOLOGISTS' ASSOCIATION
Chairman: Rotated
Conveners: Dr. Y. K. C. Pandit and Dr. B. D. Telang, 395, Lamington Road, Bombay 4, India
Time and Place: 7:30 p.m., third Wednesday of each month. The seven ophthalmic hospitals of Bombay by rotation

BRITISH ASSOCIATION OF OTOLARYNGOLOGISTS
President: Mr. V. E. Negus
Honorary Secretary: Mr. Myles L. Formby, 45 Lincoln's Inn Fields, London W. C. 2, England

Secretaries of societies are requested to furnish the information necessary to make this list complete and keep it up to date.

BRITISH MEDICAL ASSOCIATION, SECTION ON OPHTHALMOLOGY
President: Mr. J. H. Doggart
Secretary: Mr. B. Gluck, 76 Cathedral Road, Cardiff, Wales

CANADIAN MEDICAL ASSOCIATION, SECTION ON OPHTHALMOLOGY
Secretary: Dr. J. Clement McCulloch, 830 Medical Arts Building, Toronto, Ont.

CANADIAN OPHTHALMOLOGICAL SOCIETY
President: Dr. P. B. Macfarlane
Secretary: Dr. R. G. C. Kelly, 113 St. Clair Avenue W., Toronto 5, Ont., Canada
Time and Place: June 16 to 18, 1955, Bigwin Inn, Muskoka, Ontario

CANADIAN OTOLARYNGOLOGICAL SOCIETY
President: Dr. G. Edward Tremble
Secretary: Dr. G. Arnold Henry, 170 St. George Street, Toronto, Ont., Canada
Time and Place: June 16 to 18, 1955. Bigwin Inn, Muskoka, Ontario

CENTRO DE ESTUDOS DE OFTALMOLOGIE DE SAO PAULO
President: Dr. Rubens Belfort Mattos
Secretary: Dr. Jose Carlos Gouvea Pacheco, Marconi 34, Sao Paulo, Brazil

CHENGTU OPHTHALMOLOGICAL SOCIETY
President: Dr. Eugene Chan
Secretary: Dr. D. S. Shen, Eye, Ear, Nose and Throat Hospital, Chengtu, Szechuan, China
Place: Eye, Ear, Nose and Throat Hospital, Chengtu, Szechuan, China

CHINESE OPHTHALMOLOGY SOCIETY
President: Dr. C. H. Chou
Secretary: Dr. F. S. Tsang, 221 Foochow Road, Shanghai

CHINESE OPHTHALMOLOGICAL SOCIETY OF PEKING
President: Dr. G. C. Lin
Secretary: Dr. H. L. Chen, Ophthalmological Dept., Peking University Medical School, Peking
Time: Bimonthly

DEUTSCHE OPHTHALMOLOGISCHE GESELLSCHAFT HEIDELBERG
President: Prof. Dr. med. W. Löhlein
Secretary: Prof. Dr. med. E. Engelking, Heidelberg, Universitäts-Augenklinik
Time and Place: Generally in September in Heidelberg

FACULTY OF OPHTHALMOLOGISTS
President: Mr. J. H. Doggart
Secretary: Mr. E. F. King, 45 Lincoln's Inn Fields, London, W.C. 2, England

HUNGARIAN MEDICAL TRADE UNION, SECTION OF OPHTHALMOLOGY
President: Prof. I. Csapody
Secretary: Dr. E. Galla, Krisztina Körut 139, Budapest, Hungary
Time and Place: Bimonthly. Second Eye Clinic, Budapest

HUNGARIAN OPHTHALMOLOGICAL SOCIETY
President: Prof. G. Horay
Assistant Secretary: Dr. Stephen de Grosz, University Eye Hospital, No. 1, Illesucca 15, Budapest

ISRAEL OPHTHALMOLOGICAL SOCIETY
President: Dr. Aryeh Feigenbaum
Secretary: Dr. E. Sinai, 9 Bialik Street, Tel Aviv

MIDLAND OPHTHALMOLOGICAL SOCIETY
President: Dr. F. A. Williamson-Noble
Secretaries: Dr. R. D. Weeden Butler, and Dr. M. J. Roper-Hall, c/o Birmingham & Midland Eye Hospital, Church St., Birmingham 3, England
Place: Birmingham & Midland Eye Hospital, Church St., Birmingham 3, England

MONTREAL OPHTHALMOLOGICAL SOCIETY
President: Dr. A. L. Guertin
Secretary: Dr. William Turnbull, 1414 Drummond St., Montreal, Que., Canada
Time and Place: Second Thursday of October, Royal Victoria Hospital; Second Thursday in December, Notre Dame Hospital

NEDERLANDSCH OOGHEELKUNDIG GEZELSHAP
President: Prof. Dr. H. M. Dekking
Secretary: Dr. T. A. Vos, Laan v. Meerdervoort 394, Gravenhage, The Netherlands

NORTH OF ENGLAND OPHTHALMOLOGICAL SOCIETY
President: Mr. A. McKie Reid
Secretary: Mr. W. M. Muirhead, 70 Upper Hanover Street, Sheffield 3, England
Time and Place: October to May. Manchester, Leeds, Newcastle-on-Tyne, Liverpool, Sheffield and Bradford

NORSKE OYELEGERS FORENING (SOCIETY OF NORWEGIAN OPHTHALMOLOGISTS)
President: Dr. Ludvig Wirsching
Secretary: Dr. Olav Lunde, Teatergaten 11, Oslo, Norway

THE NOVA SCOTIA SOCIETY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. J. C. Cormier
Secretary-Treasurer: Dr. E. I. Glenister, 513 Barrington Street, Halifax, Nova Scotia
Time: Four times yearly at dates to be arranged by the Executive

OPHTHALMOLOGICAL SOCIETY OF AUSTRALIA
President: Miss Ida Mann
Secretary: Mr. Peter A. Rogers, 235 Macquarie Street, Sydney, New South Wales, Australia
Time and Place: October 17 to 21, 1955, Camberra, A.C.T., Australia

DET OFTALMOLOGISKE SELSKAB I KOBENHAVN (DENMARK)
President: Dr. G. Osterberg
Secretary: Dr. E. Vesterdal, Bülowsvej 18.B., Copenhagen, Denmark
Place: Rigshospitalets ojenafdeling, Copenhagen, Denmark

OPHTHALMOLOGICAL SOCIETY OF EGYPT
President: Dr. Mohammad Osman Yousef
Honorary Secretary: Dr. Sabri Kamel, Dar El Hekmah, 42 Ksar El Ainy Street, Cairo, Egypt
Time and Place: Annual meeting during March. Summer meeting during August. Dar El Hekmah 42 Kasr El Ainy Street, Cairo, Egypt

OPHTHALMOLOGICAL SOCIETY OF HOSPITAL DE NUESTRA SENORA DE LA LUZ
Chairman: Dr. Manuel J. Icaza y Dublan
Secretary: Dr. Jorge Meyran, Ezequiel Montes 135, Mexico, D. F.
Time and Place: Second Friday of each month. Hospital de Nuestra Senora de la Luz

OPHTHALMOLOGICAL SOCIETY OF NEW ZEALAND
President: Dr. W. E. Carswell
Secretary: Dr. W. J. Hope-Robertson, Kelvin Chambers, 16 The Terrace, Wellington

OPHTHALMOLOGICAL SOCIETY OF SOUTH AFRICA
President: Dr. J. K. deKock
Secretary-Treasurer: Dr. J. Guillaume Louw, 901 Dumbarton House, Adderly Street, Cape Town

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM
President: Mr. O. Gayer Morgan
Honorary Secretary: Mr. Arthur Lister, 45 Lincoln's Inn Fields, London W. C. 2
Time and Place: April 28-30, 1955. Royal Society of Medicine

OPHTHALMOLOGISCHE GESELLSCHAFT IN WIEN
President: Prof. K. Lindner
Secretary: Dr. W. Funder, Wien IX., Alserstrasse 4, II. Univ. Augenklinik
Time and Place: Jeden 2. Montag im Monat, 19°° Wien IX., Alserstrasse 4, im Hörsaal der II. Augenklinik

OXFORD OPHTHALMOLOGICAL CONGRESS
Master: Mr. Frank W. Law
Honorary Secretary and Treasurer: Mr. Ian C. Fraser, 21 Dorpole, Shrewsbury, Salop.
Time and Place: June 28 to 30, 1955, Physiological School, Oxford

PHILIPPINE OPHTHALMOLOGICAL AND OTOLARYNGOLOGICAL SOCIETY
President: Dr. Carlos V. Yambao
Secretary-Treasurer: Dr. Jesus Tamesis, North General Hospital, Manila

POLISH OPHTHALMOLOGICAL SOCIETY
Secretary: Dr. S. Topolski, Piusa 38, Warsaw, Poland
Time and Place: Every two years—summer. Ophthalmic Clinic, Oczki 6, Warsaw

PUERTO RICAN OPHTHALMOLOGICAL SOCIETY
President: Dr. Roberto Buxeda
Secretary-Treasurer: Dr. Guillermo Pico, Ave. Ponce de Leon 654, Santurce, Puerto Rico

PUERTO RICO MEDICAL ASSOCIATION, SECTION ON OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. Jose Pico
Secretary for Ophthalmology: Dr. Guillermo Pico, Ave. Ponce de Leon 654, Santurce, Puerto Rico
Secretary for Otorhinolaryngology: Dr. Antonio Rullan
Time and Place: 8:00 P.M. on second Wednesday of even months at the Puerto Rico Medical Association Building, Santurce, P. R.

ROYAL SOCIETY OF MEDICINE, SECTION OF OPHTHALMOLOGY
President: Mr. Humphrey Neame, F.R.C.S.
Secretary: Mr. R. T. Hewitt, O.B.E., M.A., 1, Wimpole Street, London, W.1., England

SAO PAULO SOCIETY OF OPHTHALMOLOGY
President: Dr. Durval Prado
Secretary: Dr. Rubens Belfort Mattos, Rua B. Stapetininga, 29 F-3° andar, Sao Paulo, Brazil

SCOTTISH OPHTHALMOLOGICAL CLUB
President: Dr. C. W. Graham
Secretary: Dr. John D. Fraser, 31 Kingsborough Gardens, Glasgow, Scotland
Time and Place: Last Saturday of March, Edinburgh and last Saturday in October, Glasgow

SOCIEDAD ARGENTINA DE OFTALMOLOGIA
President: Dr. Eduardo J. J. Lagos
Secretary: Dr. Alberto C. Cremona, Santa Fe 1171, Buenos Aires, Argentina
Time and Place: Third Wednesday of every month. Buenos Aires

SOCIEDAD CHILENA DE OFTALMOLOGIA
President: Dr. Alberto Gormaz
Secretary: Dr. Carlos Charlin V., Calle MacIver 175-Of. 24, Santiago, Chile

SOCIEDAD COLOMBIANA DE OFTALMOLOGIA Y DE OTORHINOLARINGOLOGIA
President: Dr. Alfonso Tribin Piedrahita
Secretary: Dr. Felix E. Lozano, Apartado Nacional No. 209, Bogota, Colombia
Time and Place: Second Tuesday of each month. Club Medico.

SOCIEDAD CUBANA DE OFTALMOLOGIA

President: Dr. Rafael Labrador Fuiz
Secretary: Dr. Guillermo De La Torre, Calle G. No. 506, Vedado, Havana, Cuba
Time and Place: First Thursday bi-monthly. Malecon No. 61 Bajos, Havana, Cuba

SOCIEDAD MEXICANA DE OFTALMOLOGIA

President: Dr. Manuel de Rivas Cherif
Secretary: Dr. Emilio Remolina Lopaz, Apartado Postal No. 8112, Mexico D. F., Mexico
Time and Place: 8:30 p.m., first Tuesday of each month, Gral. PRIM 47

SOCIEDAD NICARAGUIENSE DE OFTALMOLOGIA

President: Dr. Ricardo Lacayo
Secretary: Dr. Gilberto Cuadra, Clinica Especializada, Managua, D. N., Nicaragua, C. A.

SOCIEDAD DE OFTALMOLOGIA DE CORDOBA

Chairman: Dr. Alberto Urrets-Zavalia, Sr.
Secretary. Dr. R. Obregon Oliva, 9 de Julio 560, Cordoba, Argentina

SOCIEDAD DE OFTALMOLOGIA DE GUADALAJARA

President: Dr. Elias Mendoza Gonzalez
Secretary: Dr. Jose Martin del Campo, Av. Juarez 211, Desp. 314, Guadalajara, Jalisco, Mexico
Place: Edificio Lutencia Despacho 101

SOCIEDAD OFTALMOLOGICA HISPANO-AMERICANA

President: Prof. Mariano Soria Escudero
Secretary: Dr. Carlos Costi Garcia de Tunon Montalban, 3, Madrid, Spain

SOCIEDAD DE OFTALMOLOGIA DEL LITORAL

President: Dr. Juan Manuel Vila Ortiz, Cordoba 1915, Rosario, Argentina
Secretary: Dr. Carlos M. Soto
Time and Place: Last Sunday in every month. Rosario

SOCIEDAD OFTALMOLOGICA DE VALPARAISO

President: Prof. Dr. Jean H. Thierry
Secretary-Treasurer: Dr. Jorge Oyarzum O, Hospital de Ojos, Calle Blas, Cuevas, Valparaiso

SOCIEDAD DE OFTALMOLOGIA Y OTORRHINOLARINGOLOGIA DEL PARAGUAY

President: Dr. Crispin Insaurralde
Secretary: Dr. Honorio Campuzano, Coronel Bogado 492, Asuncion, Paraguay

SOCIEDAD PERUANA DE OTO-RINO-LARINGOLOGIA Y OFTALMOLOGIA

President: Dr. Enrique Cipriani V., Pasaje Olaya 156, Lima, Peru
Secretario General: Dr. Enrique Haro
Secretario de Actas: Dr. Alberto Castillo R.

SOCIEDADE BRASILEIRA DE OFTALMOLOGIA

President: Dr. Paulo C. Pimental
First Secretary: Dr. Pedro Moacyr de Aguiar, Ladera Santa Thereza 136, Apt. 101, Rio de Janeiro
Second Secretary: Dr. Luiz Enrico Ferreira
Time: Third Friday of every month from April to December

SOCIEDADE PORTUGUSEA DE OTORRINOLARINGOLOGIA E DE BRONCHO-ESOFAGOLOGIA

President: Dr. Alberto Luis de Mendonca
Secretaries: Dr. Antonio da Costa Quinta and Dr. Albano Coelho, Avenida da Liberdade, 65, Lisbon 1, Portugal

SOCIEDADE DE OFTALMOLOGIA DE MINAS GERAES

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Secretary: Dr. Mariana Noronha, Pauso Alegre 1150, Belo Horizonte, Est. Minas Geraes

SOCIEDADE DE OFTALMOLOGIA DEL NORTE

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Secretary: Dr. Felix Berman, San Lorenzo 345, Tucuman, Argentina
Place: Mendoza 421, Tucuman

SOCIEDADE DE OFTALMOLOGIA E OTO-RHINO-LARYNGOLOGIA DE BAHIA

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Secretary: Dr. Adroaldo de Alencar

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Secretaries: Dr. Rubens Cabral, Rua Paissandu 73, Rio de Janeiro, Brazil
Dr. Mairelles Vieira

SOCIETA OFTALMOLOGICA ITALIANA

President: Prof. Giuseppe Ovia
Secretary: Prof. E. Leonardi, Piazza degli Eroi, 11 Roma, Italy
Place: Roma Piazza degli Eroi 11

SOCIETE BELGE D'OPHTALMOLOGIE

President: Dr. L. Weekers
Secretary-General: Dr. M. Appelmans, 179 avenue Reulens, Louvain, Belgium
Time and Place: Last Sunday of February, June and November. Bruxelles

SOCIETE FRANCAISE D'OPHTALMOLOGIE

Secretaire-général: Dr. Marcel Kalt, 81 rue Saint Lazare, Paris (9) France
Time and Place: May 8 to 12, 1955. Paris

SOCIETE FRANCAISE D'OTO-RHINO-LARYNGOLOGIE

President: Dr. Louis Leroux
Secretary-General: Dr. H. Flurin, 19 rue MacMahon, Paris, France
Place: Paris, France

SOCIETY OF SWEDISH OPHTHALMOLOGISTS

President: Prof. S. Larsson
Secretary: Dr. K. O. Grantstrom, Sodermalmstorg 4, Stockholm So, Sweden
Time: Annual meeting, beginning of June

SOUTHERN OPHTHALMOLOGICAL SOCIETY, ENGLAND

President: Dr. C. B. V. Tait
Hon. Secretary and Treasurer: Nigel Cridland, D.M., D.O., 25 Craneswater Park, Southsea, Hants, England

TORONTO ACADEMY OF MEDICINE, SECTION OF OPHTHALMOLOGY

Chairman: Dr. J. P. Harshman
Secretary: Dr. T. J. Pashby, 1050 Avenue Rd., Toronto 5, Ont., Canada
Time and Place: Second Monday night of November, January, February and March. Academy of Medicine, Toronto

NATIONAL

AMERICAN ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

President: Dr. Algernon B. Reese
Executive Secretary-Treasurer: Dr. William L. Benedict, 100 First Avenue Building, Rochester, Minn.
Time and Place: October 9-14, 1955, Palmer House, Chicago, Ill.

AMERICAN BRONCHO-ESOPHAGOLOGICAL ASSOCIATION

President: Dr. Clyde A. Heatly
Secretary: Dr. F. Johnson Putney, 1719 Rittenhouse Square, Philadelphia 3, Pa.
Time and Place: Annual meeting, March 15 and 16, 1955 (afternoons only). Hollywood Beach Hotel, Hollywood, Fla.

AMERICAN LARYNGOLOGICAL ASSOCIATION

President: Dr. Henry B. Orton
Secretary: Dr. Harry P. Schenck, 326 S. 19th Street, Philadelphia 3, Pa.
Time and Place: March 13 and 14, 1955. Hollywood Beach Hotel, Hollywood, Fla.

AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY, INC.

President: Dr. Kenneth M. Day
Secretary: Dr. C. Stewart Nash, 708 Medical Arts Building, Rochester 7, N. Y.
Time and Place: March 15 to 17, 1955 (mornings only). Hollywood Beach Hotel, Hollywood, Fla.

Eastern Section

Vice-President: Dr. Benjamin Shuster
Secretary: Dr. F. Johnson Putney, 1719 Rittenhouse Square, Philadelphia 3, Pa.
Time and Place: January 7, 1955. Hotel Warwick, Philadelphia, Pa.

Middle Section

Vice-President: Dr. James E. Croushore
Secretary: Dr. Charles E. Kinney, 10515 Carnegie Avenue, Cleveland, Ohio
Time and Place: January 24, 1955. Sheraton-Cadillac Hotel, Detroit, Mich.

Southern Section

Vice-President: Dr. G. Slaughter Fitz-Hugh
Secretary: Dr. James A. Harrill, Bowman Gray School of Medicine, Winston-Salem, N. C.
Time and Place: January 22, 1955. Medical School Auditorium, Charlottesville, Va.

Western Section

Vice-President: Dr. Guy L. Boyden
Secretary: Dr. Harold Boyd, 1136 West Sixth Street, Los Angeles, Calif.
Time and Place: January 15-16, 1955. The Town House, Los Angeles, Calif.

AMERICAN MEDICAL ASSOCIATION, SCIENTIFIC ASSEMBLY, SECTION ON OPHTHALMOLOGY

Chairman: Dr. Erling Hansen
Secretary: Dr. Harold G. Scheie, 313 S. 17th St., Philadelphia 3, Pa.

AMERICAN MEDICAL ASSOCIATION, SECTION ON LARYNGOLOGY, OTOLOGY AND RHINOLOGY

Chairman: Dr. Francis W. Davison
Secretary: Dr. Hugh A. Kuhn, 112 Rimbach St., Hammond, Ind.
Place: Atlantic City, N. J.

AMERICAN OPHTHALMOLOGICAL SOCIETY

President: Dr. Everett L. Goar
Secretary-Treasurer: Dr. Maynard C. Wheeler, 30 W. 59th Street, New York 19, N. Y.
Time and Place: June 2, 3, and 4, 1955. Greenbrier, White Sulphur Springs, W. Va.

AMERICAN OTOLOGICAL SOCIETY, INC.

President: Dr. D. E. Staunton Wishart
Secretary-Treasurer: Dr. John R. Lindsay, 950 East 59th Street, Chicago 37, Ill.
Editor-Librarian: Dr. Henry L. Williams, Mayo Clinic, Rochester, Minn.
Time and Place: March 17-18, 1955. Hollywood Beach Hotel, Hollywood, Fla.

AMERICAN OTORHINOLOGIC SOCIETY FOR PLASTIC SURGERY
President: Dr. Mathew Ersner
Secretary: Dr. Louis Joel Feit, 66 Park Avenue, New York 16, N. Y.

AMERICAN SOCIETY OF OPHTHALMOLOGIC AND OTOLARYNGOLOGIC ALLERGY
President: Dr. Lambert McGannon
Secretary-Treasurer: Dr. Michael H. Barone, 468 Delaware Ave., Buffalo, N. Y.
Time and Place: October 14, 1955. Palmer House, Chicago, Ill.

ASSOCIATION FOR RESEARCH IN OPHTHALMOLOGY, INC.
Chairman: Dr. Brittain F. Payne
Secretary-Treasurer: Dr. James H. Allen, 1430 Tulane Avenue, New Orleans, La.

NATIONAL SOCIETY FOR THE PREVENTION OF BLINDNESS, INC.
President: Mr. Mason H. Bigelow
Executive Director: Dr. Franklin M. Foote, 1790 Broadway, New York 19, N. Y.
Time and Place: March 16 to 18, 1955, Hotel Statler, New York, N. Y.

SOCIETY OF MILITARY OPHTHALMOLOGISTS
President: Col. J. H. King, Jr.
Secretary-Treasurer: Capt. James A. Stokes, Walter Reed Army Hospital, Washington 12, D. C.
Time and Place: October 11, 1955. Palmer House, Chicago, Ill.

REGIONAL

ARK-LA-TEX OTO-OPHTHALMIC SOCIETY
President: Dr. H. H. Harms
Secretary: Dr. Jack Pou, 1513 Line Ave., Shreveport, La.
Time and Place: First Monday of month September through May. Confederate Memorial Hospital

HAWAII EYE, EAR, NOSE AND THROAT SOCIETY
President: Dr. Albert K. T. Ho
Secretary: Dr. Robert H. Lee, 1413 Nuuanu Avenue, Honolulu
Time and Place: Third Thursday of each month, September through May (dinner meetings) 6:30 p.m., Pacific Club, Honolulu

INTER-MOUNTAIN OTO-OPHTHALMOLOGICAL SOCIETY
President: Dr. Ralph W. Pugmire
Secretary-Treasurer: Dr. Orson W. White, 1010 Medical Arts Building, Salt Lake City, Utah
Time and Place: Third Monday of each month, September through May. University Club, 136 East South Temple, Salt Lake City

LOUISIANA-MISSISSIPPI OPHTHALMOLOGICAL AND OTOLARYNGOLOGICAL SOCIETY
President: Dr. D. W. Hamrick
Secretary: Dr. Edley H. Jones, 1301 Washington Street, Vicksburg, Miss.
Time and Place: May 13 and 14, 1955, Edgewater Gulf Hotel, Edgewater Park, Miss.

NASSAU OPHTHALMOLOGICAL SOCIETY
President: Dr. Frank Green
Secretary: Dr. Eugene T. Buckley, 131 Fulton Avenue, Hempstead, N. Y.
Time and Place: Second Monday in February, April, September and November, Bellmore, N. Y.

NEW ENGLAND OPHTHALMOLOGICAL SOCIETY
President: Dr. Merrill J. King
Secretary: Dr. Karl Riemer, 403 Commonwealth Avenue, Boston, Mass.
Time and Place: Third Wednesday of each month, November through April. Massachusetts Eye and Ear Infirmary

NEW ENGLAND OTO-LARYNGOLOGICAL SOCIETY
President: Dr. Charles I. Johnson
Secretary-Treasurer: Dr. Burton E. Lovesey, 15 West Central Street, Natick, Mass.
Time and Place: Quarterly, Massachusetts Eye and Ear Infirmary, 243 Charles Street, Boston, Mass.

PACIFIC COAST OTO-OPHTHALMOLOGICAL SOCIETY
President: Dr. L. Weston Oaks
Secretary-Treasurer: Dr. John F. Tolan, 3419 47th Ave. N.E., Seattle 5, Wash.
Time and Place: 1955, Portland, Ore.; 1956, Phoenix, Ariz.

SAGINAW VALLEY ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. A. J. Cortopassi
Secretary: Dr. F. J. Cady, Jr., 402 S. Jefferson Ave., Saginaw, Mich.
Time and Place: 7:00 p.m. every second Tuesday of each month, except summer months. Bancroft Hotel, Saginaw

SIOUX VALLEY MEDICAL SOCIETY
President: Dr. T. H. Willcockson
Secretary-Treasurer: Dr. Sidney F. Becker, 603 National Bank Bldg., Sioux Falls, S. D.
Time and Place: February, 1955, Sioux Falls, S. D.

SOUTHERN MEDICAL ASSOCIATION, SECTION ON OPHTHALMOLOGY AND OTOLARYNGOLOGY
Chairman: Dr. Lyle M. Sellers
Secretary: Dr. G. S. Fitz-Hugh, 104 Market Street, Charlottesville, Va.
Time and Place: November, 1955, Houston, Texas

TIDEWATER OPHTHALMOLOGICAL AND OTOLARYNGOLOGICAL SOCIETY
President: Dr. George G. Hankins
Secretary: Dr. J. G. Sellers, 413 Medical Arts Building, Norfolk, Va.
Time and Place: Quarterly, Norfolk Yacht and Country Club

WISCONSIN-UPPER MICHIGAN SOCIETY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. E. G. Schott
Secretary: Dr. G. L. McCormick, 650 South Central Avenue, Marshfield, Wis.

STATE

ALABAMA ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. David McCoy
Secretary-Treasurer: Dr. Frank Moody, 501 Medical Arts Building, Birmingham, Ala.

ARKANSAS STATE MEDICAL SOCIETY, EYE, EAR, NOSE AND THROAT SECTION
President: Dr. K. W. Cosgrove
Secretary: Dr. Max F. McAllister, Fayetteville, Ark.

CALIFORNIA MEDICAL ASSOCIATION, EYE, EAR, NOSE AND THROAT SECTION
Chairman: Dr. Frank Sooy
Secretary: Dr. Robert N. Shaffer, 490 Post Street, San Francisco, Calif.

COLORADO OPHTHALMOLOGICAL SOCIETY
President: Dr. Sam Goldhammer
Secretary: Dr. James C. Strong, Jr., 550 Metropolitan Building, Denver, Colo.
Time and Place: Third Saturday of each month, October through May, University of Colorado School of Medicine, Denver

COLORADO OTOLARYNGOLOGICAL SOCIETY
President: Dr. William H. Wilson
Secretary: Dr. Robert C. Shattuck, 406 Republican Building, Denver, Colo.
Time and Place: First Saturday of each month, October through May, University of Colorado School of Medicine, Denver

CONNECTICUT STATE MEDICAL SOCIETY, EYE, EAR, NOSE AND THROAT SECTION
Chairman: Dr. Sherburne Campbell
Secretary-Treasurer: Dr. Max Alpert, Professional Building, 881 Lafayette Street, Bridgeport, Conn.

FLORIDA SOCIETY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. G. Tayloe Gwathmey
Secretary-Treasurer: Dr. Carl S. McLemore, 1217 South Kuhl Avenue, Orlando, Fla.
Time and Place: Midwinter meeting—January, 1955, Miami Beach, Fla. Annual meeting—April, 1955, St. Petersburg, Fla.

GEORGIA SOCIETY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. Thomas Harbin
Secretary: Dr. Alton V. Hallum, 245 Doctors Building, Atlanta 3, Ga.
Time and Place: First Friday and Saturday of March. General Oglethorpe Hotel, Savannah

INDIANA ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. C. P. Clark
Secretary-Treasurer: Dr. John J. Flick, 1443 N. Pennsylvania Street, Indianapolis, Ind.
Time: Annually in May

IOWA ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. J. A. Thorson
Secretary: Dr. William C. Huffman, University Hospitals, Iowa City, Iowa
Place: Iowa City, Iowa

KANSAS STATE MEDICAL SOCIETY, SECTION ON OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. George F. Gsell
Secretary: Dr. David P. Trimble, 2nd Floor, Gazette Bldg., Emporia, Kan.

MASSACHUSETTS MEDICAL SOCIETY, SECTION ON OPHTHALMOLOGY AND OTOLARYNGOLOGY
Chairman: Dr. Edwin B. Dunphy
Secretary: Dr. John E. McKeigue, 403 Commonwealth Avenue, Boston 15, Mass.

MICHIGAN STATE MEDICAL SOCIETY, SECTION ON OPHTHALMOLOGY AND OTOLARYNGOLOGY
Chairman: Dr. J. E. Croushore (Otolaryngology)
Co-Chairman: Dr. J. C. Gemeroy (Ophthalmology)
Secretary: Dr. R. W. Teed, 215 South Main, Ann Arbor, Mich. (Otolaryngology)
Co-Secretary: Dr. F. B. Heckert, 1105 Bank of Lansing Building, Lansing, Mich. (Ophthalmology)

MICHIGAN TRIOLOGICAL SOCIETY
President: Dr. R. Wallace Teed
Secretary: Dr. Anthony D. Calomeni, 309 Seymour Avenue, Lansing, Mich.
Time: Second Thursday of November, December, March, April and May

MINNESOTA ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. Hobart Johnson
Secretary-Treasurer: Dr. Karl Sandt, 1750 Medical Arts Building, Minneapolis, Minn.
Time and Place: Second Friday of each month, November through May. Alternating, Minnesota Club, St. Paul, and Minneapolis Club, Minneapolis

MONTANA ACADEMY OF OTO-OPHTHALMOLOGY
President: Dr. James D. Morrison
Secretary-Treasurer: Dr. H. L. Casebeer, Casebeer Hospital and Clinic, Butte, Mont.
Time and Place: February 20, 1955. Butte, Mont.

NEBRASKA ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. A. E. Harrington
Secretary-Treasurer: Dr. Paul L. Peterson, 702 Sharp Building, Lincoln, Neb.
Time and Place: May, 1955, Lincoln

ACADEMY OF MEDICINE OF NEW JERSEY, SECTION ON EYE, EAR, NOSE AND THROAT
Chairman: Dr. Francis J. Grant
Secretary: Dr. William A. Sturman, 219 South Harrison Street, East Orange, N. J.
Time and Place: 8:45 p.m., second Monday of the month, October to May. The Academy of Medicine, 91 Lincoln Park, South, Newark

NEW JERSEY SOCIETY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

President: Dr. James S. Shipman
Secretary: Dr. Albert F. Moriconi, 438 Hamilton Avenue, Trenton 9, N. J.
Time and Place: May 19-22, 1955. Atlantic City, N. J.

MEDICAL SOCIETY OF NEW JERSEY, SECTION ON OPHTHALMOLOGY AND OTOLARYNGOLOGY

Chairman: Dr. William H. Hahn
Secretary: Dr. Joseph Weintrob, 1616 Pacific Avenue, Atlantic City, N. J.
Place: Atlantic City, N. J.

NEW JERSEY OPHTHALMOLOGICAL SOCIETY

President: Dr. George P. Meyer
Secretary: Dr. Charles E. Jaeckle, 136 Evergreen Place, East Orange, N. J.
Time and Place: May 19 to 22, 1955, Atlantic City, N. J.

NEW MEXICO OPHTHALMOLOGICAL SOCIETY

President: Dr. Howard B. Peck
Secretary-Treasurer: Dr. J. A. Dillahunt, 106 Girard S.E., Albuquerque, N. M.
Time: Meetings four times a year

NORTH CAROLINA EYE, EAR, NOSE AND THROAT SOCIETY

President: Dr. George B. Ferguson
Secretary-Treasurer: Dr. James D. Stratton, 1012 Kings Drive, Charlotte, N. C.
Time and Place: September 12, 13, and 14, 1955, Columbia, S. C.

OREGON ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

President: Dr. George E. Chamberlain
Secretary: Dr. Ralph N. Westfall, Medical Arts Building, Portland 5, Ore.
Time and Place: Third Tuesday each month September through May, Columbia Athletic Club, Portland, Ore.

PENNSYLVANIA ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

President: Dr. James H. Delancy
Secretary: Dr. Daniel S. DeStio, Highland Building, Pittsburgh 6, Pa.
Time and Place: May 19 to 21, 1955. Traymore Hotel, Atlantic City, N. J.

SOUTH CAROLINA SOCIETY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

President: Dr. Jewell W. McLean
Secretary-Treasurer: Dr. Roderick Macdonald, 330 East Main Street, Rock Hill, S. C.
Time and Place: September 12, 13, and 14, 1955, Columbia, S. C.

TENNESSEE STATE ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

President: Dr. Philip M. Lewis
Secretary-Treasurer: Dr. John T. Bryan, 2105 Hayes Street, Nashville, Tenn.
Time and Place: April 11 and 12, 1955. Chattanooga, Tenn.

TEXAS SOCIETY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

President: Dr. A. E. Jackson
Secretary: Dr. Gatlin Mitchell, 1604 Medical Arts Building, Fort Worth, Texas
Time and Place: December 2 and 3, 1955, Galveston, Texas

VIRGINIA SOCIETY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

President: Dr. G. Slaughter Fitz-Hugh
Secretary-Treasurer: Dr. L. Benjamin Sheppard, 301 Medical Arts Building, Richmond 19, Va.
Time and Place: May 6 and 7, 1955. Natural Bridge Hotel, Natural Bridge, Va.

WASHINGTON STATE MEDICAL ASSOCIATION, SECTION ON OPHTHALMOLOGY AND OTOLARYNGOLOGY

President: Dr. Walter C. Cameron
Secretary-Treasurer: Dr. Claude K. Miller, P.O. Box 1627, Wenatchee, Wash.

WEST VIRGINIA ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

President: Dr. Ben W. Bird
Secretary-Treasurer: Dr. Frederick C. Reel, 404 Medical Arts Building, Charleston, W. Va.
Time and Place: May 19 to 21, 1955. Atlantic City, N. J.

LOCAL

AKRON ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

President: Dr. F. Johnson
Secretary-Treasurer: Dr. John Scuderi, 145 W. Portage Trail, Cuyahoga Falls, Ohio
Time and Place: 6:30 p.m., first Monday in January, March, May and November. Akron City Club

ALTA CALIFORNIA OPHTHALMOLOGIC SOCIETY

President: Dr. John Hollister
Secretary: Dr. Alfons F. Tipshus, 242 N. Sutter, Stockton, Calif.
Time and Place: Third Thursday of month. Sutter Club, Sacramento, Calif.

ALUMNI ASSOCIATION NEW YORK EYE AND EAR INFIRMARY

President: Dr. Webb Chamberlain
Secretary-Treasurer: Dr. Joseph Krug, 988 Fifth Avenue, New York, N. Y.
Time and Place: Annual Spring Meeting each year in April, New York

ATLANTA EYE, EAR, NOSE AND THROAT SOCIETY

President: Dr. Buford O'Neal
Secretary-Treasurer: Dr. Nathan I. Gershon, 727 W. Peachtree St. N.E., Atlanta 3, Ga.
Time and Place: 7:30 p.m., fourth Monday of each month, October to May. Academy of Medicine

BALTIMORE CITY MEDICAL SOCIETY, OPHTHALMOLOGICAL SECTION

Chairman: Dr. Frederic M. Reese
Secretary-Treasurer: Dr. Herman K. Goldberg, 807 Cathedral Street, Baltimore 1, Md.
Time and Place: 8:00 p.m., Fourth Thursday of November, January and March. Medical and Chirurgical Faculty, 1211 Cathedral St.

BALTIMORE NOSE AND THROAT SOCIETY

Chairman: Dr. Albert Steiner
Secretary-Treasurer: Dr. Walter E. Loch, 1039 N. Calvert Street, Baltimore, Md.

BIRMINGHAM EYE, EAR, NOSE AND THROAT SOCIETY

President: Each member, in alphabetical order.
Secretary: Dr. David A. McCoy, 501 Woodward Building, Birmingham, Ala.
Time and Place: 6:30 p.m., second Tuesday of each month, September through April. THE CLUB—Top of Red Mt., Birmingham

BOSTON CITY HOSPITAL AURAL AND OPHTHALMIC ASSOCIATION

President: Dr. B. Riseman
Secretary: Dr. Arthur Gorney, 14 Charlesgate West, Boston, Mass.
Time and Place: Annual meeting in March, Boston City Hospital

BROOKLYN OPHTHALMOLOGICAL SOCIETY

President: Dr. Donald E. Swift
Secretary-Treasurer: Dr. Nicholas P. Tantillo, 1 Hanson Place, Brooklyn 17, N. Y.
Time and Place: 8 p.m., third Thursday in October, December, February and April. Medical Society of the County of Kings, 1313 Bedford Avenue

BUFFALO OPHTHALMOLOGIC CLUB

President: Dr. Meyer H. Riwchun
Secretary: Dr. Elizabeth P. Olmsted, 568 Lafayette Avenue, Buffalo 22, N. Y.
Time and Place: Second Thursday of each month, October through May. Park Lane

CENTRAL ILLINOIS SOCIETY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

President: Dr. George Woodruff
Secretary-Treasurer: Dr. Clarence A. Fleischli, 415 S. 7th St., Springfield, Ill.

CENTRAL NEW YORK EYE, EAR, NOSE AND THROAT SOCIETY

President: Dr. James L. McGraw
Secretary-Treasurer: Dr. George A. Sisson, 713 E. Genesee St., Syracuse, N. Y.
Time and Place: Quarterly. University Club, Syracuse, N. Y.

CHATTANOOGA AND HAMILTON COUNTY EYE, EAR, NOSE AND THROAT SOCIETY

Chairman and Secretary: Dr. C. H. Alper, 602-606 Georgia Avenue, Chattanooga, Tenn.
Time and Place: 6:30 p.m., third Thursday in each month, October through May. Mountain City Club

CHICAGO LARYNGOLOGICAL AND OTOLOGICAL SOCIETY

President: Dr. Norman Leshin
Secretary-Treasurer: Dr. Stanton A. Friedberg, 122 S. Michigan Avenue, Chicago 3, Ill.
Time and Place: First Monday of each month, Drake Hotel, Chicago, Ill.

CHICAGO OPHTHALMOLOGICAL SOCIETY

President: Dr. Justin M. Donegan
Secretary-Treasurer: Dr. Frank W. Newell, 950 E. 59th St., Chicago 37, Ill.
Time and Place: 7:30 p.m., third Monday of each month, October to May. Chicago-Illini Union, 715 S. Wood Street

CINCINNATI OPHTHALMOLOGIC CLUB

Executive Committee: Dr. Donald J. Lyle, Dr. Charles K. W. Ascher, Dr. Barnet R. Sakler
Secretary: Dr. Josef D. Weintraub, 715 Provident Bank Building, Seventh and Vine Streets, Cincinnati, Ohio
Time and Place: First Wednesday night of month, November through May. Vernon Manor Hotel

CINCINNATI OTOLARYNGOLOGIC SOCIETY

President: Dr. Joseph Filger
Secretary-Treasurer: Dr. Edward T. Juler, 4140 Hamilton Avenue, Cincinnati 23, Ohio
Time and Place: 6:30 on the third Monday of each month except July, August, September and December University Club

CLEVELAND OPHTHALMOLOGICAL CLUB

President: Dr. Roscoe J. Kennedy
Secretary-Treasurer: Dr. Russell J. Nicholl, 10515 Carnegie Ave., Cleveland 6, Ohio
Time and Place: Second Tuesday of November, January, February and April. University Club, Cleveland, Ohio

CLEVELAND OTOLARYNGOLOGICAL CLUB

President: Dr. Irving I. Cramer
Secretary-Treasurer: Dr. William F. Hulse, 1314 Hanna Bldg., Cleveland 15, Ohio

COLUMBUS OPHTHALMOLOGICAL AND OTOLARYNGOLOGICAL SOCIETY

President: Dr. Vernon D. Stephens
Secretary: Dr. Trent W. Smith, 327 E. State Street, Columbus 15, Ohio.
Time and Place: First Monday of month, October through May, University Club.

CORPUS CHRISTI EYE, EAR, NOSE AND THROAT SOCIETY
President: Dr. T. P. O'Brien
Secretary-Treasurer: Dr. Joseph A. Abbey, 429 Palmero, Corpus Christi, Texas
Time and Place: First Wednesday of month, September through May, Nueces Hotel

DALLAS ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. M. F. Waldman
Secretary: Dr. M. Ray Harrington, 4317 Oak Lawn, Dallas, Texas
Time: First Tuesday of each month

DES MOINES ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. Walter Kirch
Secretary-Treasurer: Dr. R. R. Updegraff, 616 Bankers Trust Building, Des Moines, Iowa
Time and Place: 6:00 p.m., fourth Monday of each month, September through May. Des Moines Club

DETROIT OPHTHALMOLOGICAL CLUB
Secretary-Treasurer: Dr. Frederick A. Lauppe, 1801 David Whitney Building, Detroit 26, Mich.
Time: Each month, November through April

DETROIT OPHTHALMOLOGICAL SOCIETY
President: Dr. Arthur P. Wilkinson
Secretary: Dr. J. Conrad Gemeroy, 664 Fisher Building, Detroit 2, Mich.
Time and Place: Fourth Thursday of each month, November through April, Harmoine Club, 267 E. Grand River, Detroit, Mich.

DETROIT OTOLARYNGOLOGICAL SOCIETY
President: Dr. Delmar Weaver
Secretary-Treasurer: Dr. Lyle Waggoner, 404 David Whitney Bldg., Detroit, Mich.
Time and Place: Third Wednesday of each month, September through May. David Whitney House, Wayne County Medical Society Building

SECTION ON OPHTHALMOLOGY OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA
President: Dr. Robert L. Norment
Secretary-Treasurer: Dr. Robert E. du Prey, 1150 Connecticut Ave., N. W., Washington, D. C.
Time: Second Tuesday every other month

SECTION ON OTOLARYNGOLOGY OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA
Chairman: Dr. Willard B. Walters
Secretary: Dr. Russell Page, 1835 I Street, N.W., Washington, D. C.
Time and Place: 7:00 p.m., third Tuesday in October, November, January, March and May. Army and Navy Club, 17th and Farragut Square, N.W.

OPHTHALMOLOGICAL SOCIETY OF THE EAST BAY
President: Dr. Jay Sharpsteen
Secretary: Dr. Ernest E. Hessing, 483 30th Street, Oakland 9, Calif.

EASTERN NEW YORK EYE, EAR, NOSE AND THROAT ASSOCIATION
President: Dr. John A. Cetner
Secretary-Treasurer: Dr. Frank Furlong, 713 Union Street, Schenectady, N. Y.
Time and Place: 8 p.m., first Thursday of month, October to June. Albany, Troy, Schenectady, rotating monthly

FORT WORTH EYE, EAR, NOSE AND THROAT SOCIETY
President: Dr. William Skokan
Secretary: Dr. W. P. Anthony, 708 Medical Arts Building, Fort Worth 2, Texas
Time and Place: 6:30 p.m., first Friday of each month, except July and August. St. Joseph's Hospital

GREATER MIAMI EYE, EAR, NOSE AND THROAT SOCIETY
President: Dr. Ralph Kirsch
Secretary: Dr. James H. Mendel, Jr., 7241 Red Road, Miami, Fla.
Time and Place: Quarterly—February, May, October and December at Seven Seas Restaurant

HOUSTON ACADEMY OF MEDICINE, OPHTHALMOLOGICAL AND OTO-LARYNGOLOGICAL SECTION
President: Dr. Claude C. Cody, III
Secretary: Dr. George M. Campbell, 1107 Hermann Professional Building, Houston 25, Texas
Time and Place: 6:30 p.m., second Thursday of each month, October through June. Houston Academy of Medicine Library Building

EYE, EAR, NOSE AND THROAT SOCIETY OF HUDSON COUNTY
President: Dr. Sidney Boyer
Secretary-Treasurer: Dr. Alfonse Cinotti, 3285 Hudson Boulevard, Jersey City, N. J.
Time and Place: Second Monday of each month (September through May), Jersey City Medical Center

INDIANAPOLIS OPHTHALMOLOGICAL AND OTO-LARYNGOLOGICAL SOCIETY
President: Dr. Russell A. Sage
Secretary-Treasurer: Dr. Lewis E. Morrison, 603 Hume Mansur Building, Indianapolis 4, Ind.
Time and Place: 6:30 p.m., second Thursday of each month, November to May. Indianapolis Athletic Club

KANSAS CITY SOCIETY OF O. O. R. L.
President: Dr. William B. Barry
Secretary: Dr. Dick H. Underwood, 1102 Grand Ave., Kansas City 2, Mo.
Time and Place: Third Thursday of the month, November through May. Hotel President, 14th and Baltimore

LONG BEACH EYE, EAR, NOSE AND THROAT SOCIETY
President: Dr. Sol Ludmerer
Secretary: Dr. George Zugsmith, 529 W. 8th Street, San Pedro, Calif.
Time and Place: 6:30 p.m., third Wednesday of every month September through May. Seaside Memorial Hospital

OPHTHALMOLOGICAL JOURNAL CLUB, LOS ANGELES BRANCH
President: Dr. Athur S. Gray
Secretary-Treasurer: Dr. Jacob M. Kline, 3761 Stocker Street, Los Angeles 8, Calif.
Time and Place: Second Monday of each month. Los Angeles County Medical Building

LOS ANGELES OPHTHALMOLOGICAL SOCIETY
President: Dr. Deane C. Hartman
Secretary: Dr. Daniel B. Esterly, 104 North Madison Avenue, Pasadena 1, Calif.
Time and Place: First Thursday of each month, September through June. Los Angeles County Medical Society Building, 1925 Wilshire Boulevard

LOS ANGELES SOCIETY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. Harold Owens
Secretary-Treasurer: Dr. Robert A. Norene, 3741 Stocker Street, Los Angeles 8, Calif.
Time and Place: 6:00 p.m., fourth Monday of each month, September through May—Otolaryngology Section. 6:00 p.m. first Thursday of each month from September through May—Ophthalmology Section. Los Angeles County Medical Association Building, 1925 Wilshire Boulevard

LOUISVILLE EYE AND EAR SOCIETY
President: Dr. Joseph J. Wynn
Secretary-Treasurer: Dr. R. Glen Boles, 808 Heyburn Building, Louisville 2, Ky.
Time and Place: Dinner meetings at 6:30 p.m. on the second Thursdays of alternate months, September through May. 812 S. Second Street, Louisville, Ky.

MEMPHIS SOCIETY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
Chairman: Each member, in alphabetical order
Secretary: Dr. Roland H. Myers, 1720 Exchange Building, Memphis, Tenn.
Time and Place: 8:00 p.m., second Tuesday in each month, September through June. Memphis Eye, Ear, Nose and Throat Hospital. Annual meeting February 5, 6 and 7, 1955, Peabody Hotel.

MILWAUKEE OTO-OPHTHALMIC SOCIETY
President: Dr. Erwin E. Grossman
Secretary-Treasurer: Dr. Howard V. Morter, 1714 E. Capitol Drive, Milwaukee, Wisconsin
Time and Place: 6:00 p.m., fourth Tuesday of each month, October to May, University Club

MONTGOMERY COUNTY MEDICAL SOCIETY, SECTION ON EYE, EAR, NOSE AND THROAT
President: Dr. Robert A. Bruce
Secretary-Treasurer: Dr. L. N. Shroder, 144 West Fourth Street, Greenville, Ohio
Time and Place: First Tuesday of November, February, March and May. Dayton Country Club

NASHVILLE ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. Thomas Bryan
Secretary-Treasurer: Dr. Philip L. Lyle, 340 Doctor's Building, Nashville, Tenn.
Time and Place: Third Monday evening of month, October through May. James Robertson Hotel

NEW YORK ACADEMY OF MEDICINE, SECTION ON OPHTHALMOLOGY
Chairman: Dr. John M. McLean
Secretary: Dr. Joseph Laval, 136 E. 64th St., New York, N. Y.
Time and Place: 8 p.m., third Monday of the month, October through May, New York Academy of Medicine, 103rd St. and Fifth Ave., N. Y.

NEW YORK ACADEMY OF MEDICINE, SECTION ON OTOLARYNGOLOGY
Chairman: Dr. DeGraaf Woodman
Secretary: Dr. Otto C. Risch, 104 East 40th Street, New York 17, N. Y.
Time and Place: Third Wednesday of each month

NEW YORK SOCIETY FOR CLINICAL OPHTHALMOLOGY
President: Dr. Frederick H. Theodore
Secretary: Dr. Leon H. Ehrlich, 211 Central Park West, New York, 24, N. Y.
Time and Place: First Monday of the month, October through May. New York Academy of Medicine

OKLAHOMA CITY ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. Clifford J. Blair
Secretary: Dr. Richard Wyrick, 812 Medical Arts Building, Oklahoma City, Oklahoma
Time and Place: First Tuesday of each month. University Hospital, 800 Northeast 13th Street, Oklahoma City

OMAHA EYE, EAR, NOSE AND THROAT SOCIETY
President: Dr. James J. O'Neil
Secretary-Treasurer: Dr. Stanley M. Truhlsen, 1500 Medical Arts Building, Omaha, Neb.
Time and Place: Dinner meeting third Wednesday monthly, October to May. Omaha Club

COLLEGE OF PHYSICIANS OF PHILADELPHIA, SECTION ON OPHTHALMOLOGY
Chairman: Dr. Edmund B. Spaeth
Clerk: Dr. William E. Krewson, 3rd, 1930 Chestnut Street, Philadelphia 3, Pa.
Time and Place: 8:15 p.m., third Thursday of every month, October through April. College of Physicians Building

PHILADELPHIA COUNTY MEDICAL SOCIETY, EYE SECTION
Chairman: Dr. Wilfred E. Fry
Secretary: Dr. Thomas H. Cowan, 1930 Chestnut St., Philadelphia, Pa.
Time: First Thursday of each month, November through April

PHILADELPHIA LARYNGOLOGICAL SOCIETY
President: Dr. William J. Hitschler
Secretary: Dr. Joseph P. Atkins, 3400 Spruce Street, Philadelphia, Pa. c/o U. of P. Hospital.
Time and Place: 8:30 p.m., first Tuesday of month, October through May, College of Physicians Building

PITTSBURGH ACADEMY OF MEDICINE, SECTION ON OPHTHALMOLOGY
President: Dr. John S. Plumer
Secretary: Dr. Samuel D. Evans, 1501-2 Park Building, Pittsburgh 22, Pa.
Time and Place: 8:00 p.m., fourth Monday of each month, October through May. Pittsburgh Academy, 322 North Craig Street

PITTSBURGH OPHTHALMOLOGICAL SOCIETY
President: Dr. Fred Larimore
Secretary: Dr. Gertrude Baldwin, Greensburg, Pa.
Time and Place: 8 p.m., fourth Monday of month, Pittsburgh, Pa.

PITTSBURGH OTOLOGICAL SOCIETY
President: Dr. Louis L. Friedman
Secretary: Dr. John Dickinson, Mercy Hospital, Pittsburgh, Pa.
Time: Quarterly

PUGET SOUND ACADEMY OF OPHTHALMOLOGY AND OTO-LARYNGOLOGY
President: Dr. Carl D. F. Jensen
Secretary-Treasurer: Dr. Willard F. Goff, 432 Stimson Building, 1215 Fourth Avenue, Seattle 1, Wash.
Time and Place: Third Tuesday of each month except July, August, December and January. Medical-Dental Building, Seattle

READING EYE, EAR, NOSE AND THROAT SOCIETY
President: Dr. C. W. Hancox
Secretary: Dr. James H. Parker, Jr., 238 N. 5th St., Reading, Pa.
Time and Place: Third Wednesday of each month, September through June (dinner meetings). Wyomissing Club

RICHMOND, VIRGINIA, EYE, EAR, NOSE AND THROAT SOCIETY
President: Dr. L. B. Sheppard
Secretary-Treasurer: Dr. Charles N. Romaine, 1001 West Franklin Street, Richmond 20, Va.
Time and Place: First Tuesday of January, March, May and October. Commonwealth Club

ST. LOUIS COUNTY MEDICAL SOCIETY, SECTION ON EYE, EAR, NOSE AND THROAT
Chairman: Dr. J. C. O'Neill
Secretary: Dr. J. H. Leek, 205 W. Second St., Duluth, Minn.
Time and Place: 6:00 to 8:00 p.m., second Thursday of every month, preceding the monthly St. Louis County Medical Society meeting. St. Mary's or St. Luke's Hospital, Duluth, Minn.

EAR, NOSE AND THROAT CLUB OF ST. LOUIS
Chairman: Dr. Robert E. Votaw
Secretary: Dr. Harry N. Glick, 1504 South Grand Boulevard, St. Louis 4, Mo.
Time and Place: Third Wednesday in November, January, March and May, University Club Building

ST. LOUIS OPHTHALMOLOGICAL SOCIETY
President: Dr. Robert Dean Mattis
Secretary: Dr. Anton J. Hummel, Metropolitan Bldg., St. Louis 3, Mo.
Time and Place: 8:00 p.m., fourth Thursday of each month, October through April, except December. Park Plaza Hotel

SAN ANTONIO SOCIETY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. George B. Moore, Jr.
Secretary: Dr. Graham B. Milburn, 1617 Nix Professional Building, San Antonio, Texas
Time: Third Tuesday of each month, September through May

SAN DIEGO COUNTY OPHTHALMOLOGICAL SOCIETY
President: Dr. Hugo Lucic
Secretary-Treasurer: Dr. Oscar G. Ravin, 233 A Street, San Diego 1, Calif.
Time and Place: University Club, second Monday of each month

SAN FRANCISCO COUNTY MEDICAL SOCIETY, EYE SECTION
Chairman: Dr. Robert N. Shaffer, 490 Post Street, San Francisco, Calif.
Secretary: None
Time and Place: Fourth Tuesday of each month, February, April, September and November, San Francisco County Medical Society Building

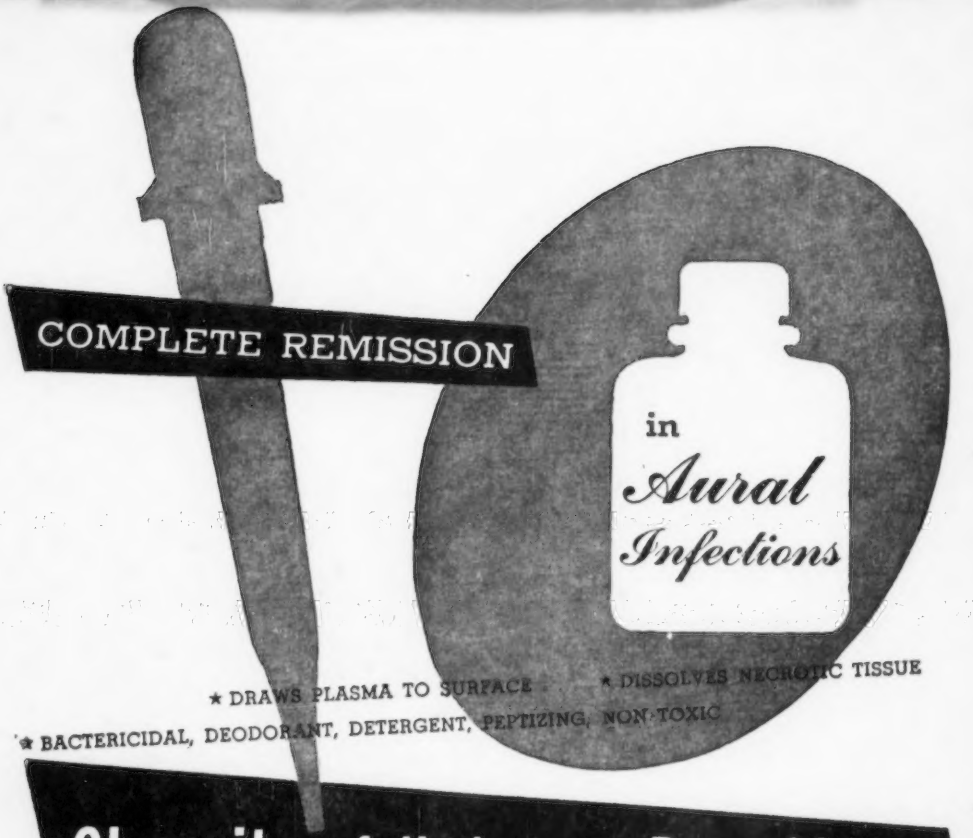
SPOKANE ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
President: Dr. Randall W. Henry
Secretary: Dr. Robert C. Maher, 512 Medical Center Building, Spokane 4, Wash.
Time and Place: 8:15 p.m., Fourth Tuesday of each month, September through May. Paulsen Medical and Dental Building

SUPERIOR CALIFORNIA EYE CLUB
President: Dr. Theodore Holstein
Secretary: Dr. John Berg, 436 Medico-Dental Bldg., Sacramento 14, Calif.
Time: Every third Thursday, eight months of the year

TOLEDO EYE, EAR, NOSE AND THROAT SOCIETY
President: Dr. L. Reed Crammer
Secretary: Dr. Henry Drake, 316 Michigan Avenue, Toledo, Ohio
Time and Place: Third Tuesday of each month, November through May, Toledo Club

WESTERN PENNSYLVANIA EYE, EAR, NOSE AND THROAT SOCIETY
President: Dr. H. R. Mather, Jr.
Secretary-Treasurer: Dr. F. E. Murdock, 28½ West Scribner Avenue, DuBois, Pa.
Time: Biannually. Third Thursdays of April and September

WILKES-BARRE OPHTHALMOLOGICAL SOCIETY
President: Dr. Charles J. Kistler
Secretary: Dr. Albert J. Abbott, 203 E. Green Street, Nanticoke, Pa.
Time and Place: Last Tuesday of each month, October through May, except December. Luzerne County Medical Society Library, 130 South Franklin Street, Wilkes-Barre, Pa.



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★ BIBLIOGRAPHY

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Laryngoscope, 56:556, 1946.
New Eng. J. Med., 234:468, 1946.
Annals of Allergy, 4:33, 1946.
J. A. Ph., A., (Sc. Ed.) 35:304, 1946.

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